June 30, 1962
Vol 162—No. 26

Telephony

THE JOURNAL OF THE TELEPHONE INDUSTRY

Donald Scott, installer with Peoples Telephone Corp., Butler, Pa., shows his wife and two sons some of the Butler central office equipment during the Open House tour held recently for employes and their families. About 700 persons toured the various offices and departments during the affair. See story on page 50.

Circulation This Issue
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MANAGEMENT · PLANT · TRAFFIC · COMMERCIAL · LEGAL · ACCOUNTING

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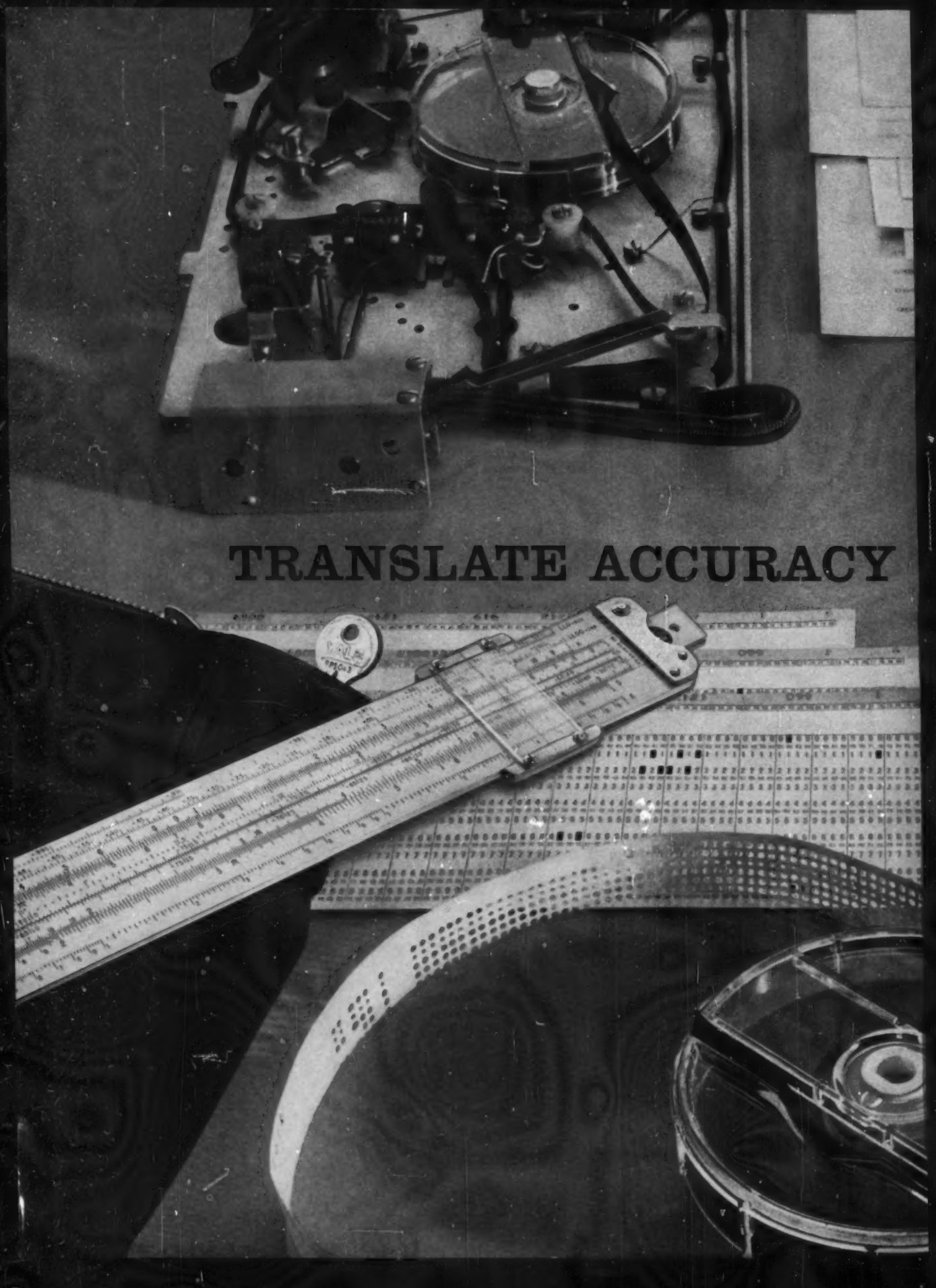
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"One booth was so popular, we had to put in another alongside. This eliminated customers' complaints of having to wait to use the phone. It not only proved to be good public relations, but also earned us extra income.

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FLASHES AND PLUGS

NOW, IN THE OLD DAYS.—A correspondent wrote to the Weyauwega (Wis.) "Chronicle", hinting that more and more, perhaps, we are becoming softies. He told a story about an Illinoisan who visited in Wisconsin, and learned, for the first time, what a charivari can be like when he and his bride were called upon, charivari style, by 40 friends.

Evidently, the Illinoisans were astonished at the noisy welcome they received. However, it just wasn't all it might have been.

It seems, one of the neighbors planned to open the serenade by firing a few 12-gauge rounds (he had removed the shot from the shells and taken the trouble to tell the police what he was going to do), but instead of a loud report, there was just a soft "pouff", about the same number of decibels as the popping of a paper bag.

This fizzle of the charivari salute called forth the recollection of a much noisier serenade a few years before when another newlywed couple was greeted with live ammunition and celebrants shot down the telephone wires.

•

LIFE-SAVING BLONDE. In the June issue of "Telebriefs", it is reported that an unusual lady arrived at Illinois Bell Telephone Co. on Apr. 5.

The poor girl's always meeting tragedy. Sometimes they report she's been drowned . . . sometimes electrocuted . . . sometimes suffocated.

Although this blonde is a "dummy," she's especially educated to teach mouth-to-mouth resuscitation. The life-like model, five feet tall, will meet every Illinois Bell plant man as part of his first aid training.

•

BLESSED RELIEF, SHE SAYS. A lady, musing upon telephone pests who have taken up her time, asks:

"Ever notice how surprised the younger generation is when a telephone call turns out to be for Mom or Dad?"

"Well," says she, "By golly, their stunned expressions almost make listening to a telephone salesman's 15-minute sales pitch pleasant!"

Betcha customer's service would like to get leads like this on another line at your house or mine—for the teenagers, of course.

•

THEY MEANT IT! A Milwaukee, Wis. couple recently telephoned their physician to say they believed that their second child was on the way.

"Call me in an hour," said the doctor.

They did—and reported that a baby boy had been born at home.

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Telephony

THE JOURNAL OF THE TELEPHONE INDUSTRY

SINCE 1901

June 30, 1962

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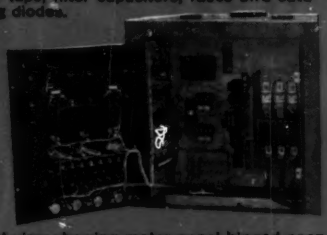
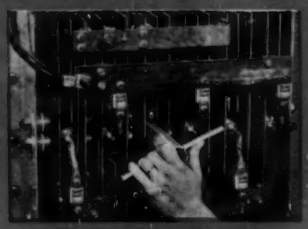
Front view, cover off. Model F400D50, showing convenient arrangement of input transformer, input taps, filter capacitors, fuses and saturating diodes.



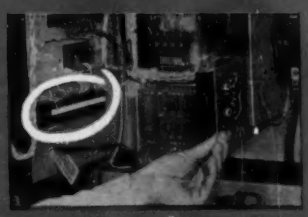
Front view showing meter panel hinged open to expose installer's terminals, input terminations and fuses, the plug-in reference circuit, the hinged component card and other components. All are directly accessible. Note the ample clearance around the input terminals and their proximity to the input bushing for safe and easy installation.

Model F400D50, rear view, cover off, showing accessible output terminals at the top. The silicon diodes with pigtail connections to the fuses, located between the heat sinks, are individually removable without disassembling the stack.



Detail view of power stack showing the compact arrangement of the silicon diodes and heat sinks. The diodes extend outwardly between sink plates and are quickly and easily removable, as shown, by means of a spark plug type wrench furnished with the unit. This arrangement allows diode replacement without disassembling the stack or removing it from the unit.

The meter panel, frame removed, showing the compact and central arrangement of the meters, operating switches, lamps, control breaker levers and adjusting screws. A complete control center.



The plug-in reference circuit card is removable, independent and interchangeable with the circuit in other Silicon FLOTROL models. Note the conveniently located installer's terminal strip and hinged component card, both to the left of the reference circuit card.

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"Right! And perhaps the most remarkable thing of all is that when you go from wire to cable to radio—you can do it without degrading transmission quality. It's done at carrier frequencies, so you save money, too!"

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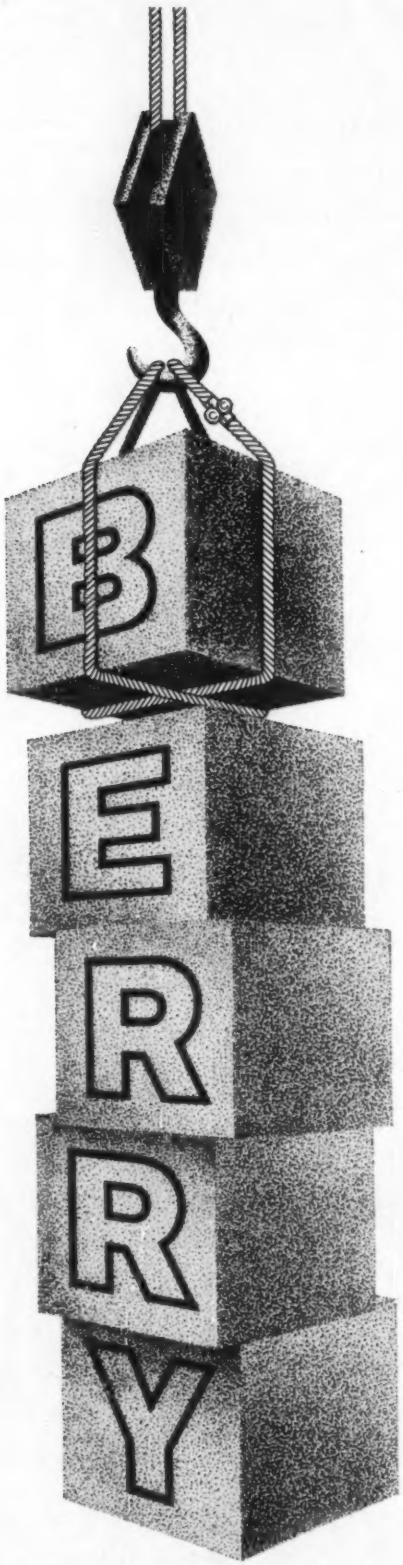

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IN THE NATION'S CAPITOL

BY LAWRENCE J. HOGAN, WASHINGTON EDITOR
and President, Larry Hogan Associates,
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Senator Kefauver becomes most vocal standard bearer of advocates of government ownership of communications satellite system . . . . Rankles colleagues by trying to talk private ownership bill to death.

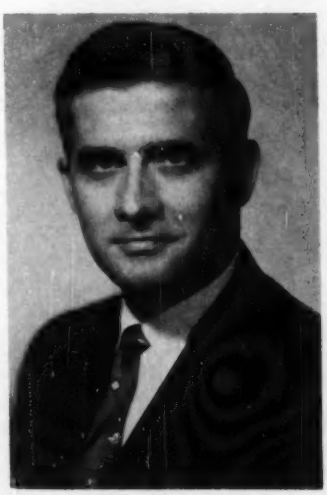
SEN. ESTES KEFAUVER (D., Tenn.) has become the most vocal standard bearer for the opponents of H.R. 11040 which provides for the establishment, ownership, operation and regulation of a commercial communications satellite system. A bitter foe of seeing the satellite system privately owned by communications companies and public investors, Kefauver, on June 20 on the floor of the Senate, described the administration-backed bill as "a tremendous victory for the communications carriers and a giveaway of millions of taxpayers' dollars."

Despite assurances by Sen. John O. Pastore (D., R.I.), floor manager of the measure, and other supporters of the legislation that the bill has been carefully drawn to prevent American Telephone & Telegraph Co. or any other communications company from achieving dominance, Kefauver has rankled many of his colleagues by trying to talk the bill to death and harp on this one aspect.

His comrades in arms have been Senators Maurine B. Neuberger (D., Ore.), Wayne L. Morse (D., Ore.), Russell B. Long (D., La.), Ralph W. Yarborough (D., Tex.), Joseph S. Clark (D., Pa.), and Quentin N. Burdick (D., N.D.). During the latest skirmish on the floor of the Senate, Sen. A. Willis Robertson (D., Va.) and Sen. George A. Smathers (D., Fla.) both indicated they believed that Kefauver was endeavoring to filibuster on the bill because of his insistence upon a voluble assault on the bill and his reluctance to see it come up for a vote. Robertson said that he felt the essence of Kefauver's proposal was, "I want to speak on the bill, but I will not let you bring it up."

In a by-line article printed in the Washington *Sunday Star* on June 17, Kefauver took the opposing view against Sen. Robert S. Kerr (D., Okla.), who had an article in the *Star* at the same time in favor of the bill. Kefauver's written arguments were approximately the same as those he has used on the floor of the Senate. Senator Kerr, co-author of the Kerr-Magnuson Bill, whch has been passed by the House and which is being debated in the Senate, pointed out on his side of the argument in the *Star* that, "It is later than we think in the critical race to get the eyes and ears of the world. If Russia should win a masterful voice in space, then we know the Communists would keep a closed circuit for themselves and their party line."

He went on to say, "Our bill has an effective system of checks and balances. Actually, there is no more reason for government ownership of this communications system than of our broadcasting industry, telephone or telegraph companies. It is true, the government has spent big money in space research but primarily for national defense purposes. The satellite communications plan is a by-product, an extra bonus which we must use most wisely."



L. J. HOGAN

Referring to views such as those held by Kefauver, Kerr declared, "Advocates of government ownership make the amazing claim that the federal government singlehandedly, without any experience, could magically operate this most technical and revolutionary project ever envisioned. In the same breath, they picture the same government suddenly impotent and unable to restrain the proposed corporation, despite a century of experience in successful utility regulation."

With regard to the claims of the bill's opponents that the taxpayer will receive no benefit for his tax dollar spent, Senator Kerr said, "Under our bill, the taxpayer will benefit directly by not having his tax money used to build the new system. The corporation will construct and pay for the system as well as its own continuing research. Furthermore, the corporation will immediately pay state and local ad valorem taxes, and when a profit is earned, if present law continues, 52 cents of every dollar made will be paid as income tax."

He concluded by saying, "I'm confident the Kerr-Magnuson bill will soon be passed. We can then watch developments with keen anticipation and gratification. We will experience ever-increasing pride in our free enterprise system. We will achieve greater prestige around the world as this new corporation moves majestically ahead in building and operating an ever-expanding world-wide system of communication satellites."

And so the fight goes on. During an administration, such as the present

one, when its fingers are in all industrial and business pies, when more and more private activities are devolving to federal intervention, it is good to see private enterprise and private citizens being offered at least a piece of pie by President Kennedy. The proponents of this bill should make sure that the communications satellite does not become yet another wholly administered government enterprise at the expense of the American taxpayer.

A tone similar to a beep is transmitted to the operator enabling her to tell just how much money has been put into the coin box but the caller doesn't hear the beep.

Another development is the elimination of separate slots for various coins. Now there will be one slot in the upper left-hand corner, and a lever instead of a pushbutton will release bent coins. Still another improvement consists of several internal changes which, according to Western Electric, "offer maximum protection against fraudulent dialing of calls."

From yet another quarter, some telling remarks were made by Rosel H. Hyde, FCC commissioner, before the Mountain-Pacific States Conference of Public Service Commissions at Seattle, Wash., on June 20. Although much of his talk was devoted to the technical aspects of the communications satellite, he noted that, "Strangely enough, technological progress in the field of space communications has received much less publicity than the question of who will own and operate the system. Perhaps this is due in part to the fact that anything at all connected with space seems to be saturated with glamor, and it is automatically assumed that there must be a fortune in it for someone."

With comments obviously tailored to the type of objections raised by Kefauver and his camp, Hyde said, "I think it is worth taking the time right now to dispel this illusion. There's an old, interesting book called 'Common Popular Delusions and the Madness of Crowds' in which other bonanzas are discussed—The Tulip Mania, the South Seas Bubble, the Mississippi Scheme. Unknown frontiers seem to invite this sort of financial daydreaming. But space promises to be almost as empty of riches as it is of matter."

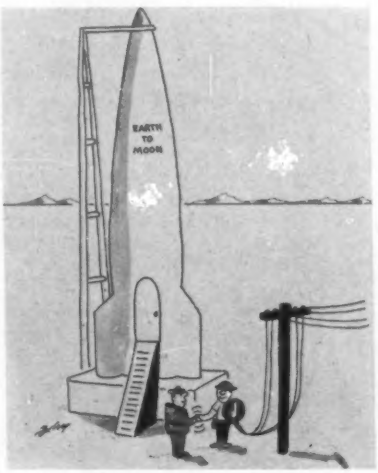
He went on to say, "The final reality is that whenever the system does go up—no matter who puts it up or who owns it—it will be government regulated. And our statute books don't allow regulated industries to make many new millionaires."

"Government ownership," he opined, "hardly seems the way to demonstrate the superiority of the private enterprise system."

Discussed at Seattle Fair

Opposition to program control by the FCC and optimism of satellite communications were among two of the views voiced at a news conference panel held at the Seattle's World Fair as a feature of communications week.

The opposition to program control was expressed by a member of the FCC—T.A.M. Craven. He agreed with FCC Chairman Minow that television programs could stand a lot of improvement. But Craven said that programing control of both television and radio should be left in the hands of the responsible private operating industry. Craven also expressed support for private industry control of outer space commercial communications.



"It is possible we will have a commercial space communications system in operation by 1965," said Claude Blair, vice president of AT&T, during the same panel interview. Blair is the director of the AT&T space communications program and he predicted that the Telstar communications satellite will be launched on schedule in July. He added that "such a system can furnish mass bundles of communication and bring transocean television on a live basis."

Telephone Excise With Us Still

As previously reported, the federal 10 per cent excise tax on telephone monthly bills and toll calls will go on another year. The Senate Finance Committee has voted to eliminate the 10 per cent tax on train and bus travel effective July 1. The House bill called for the repeal to take effect on Jan. 1. The Senate, however, went along with the House in cutting the tax on airline tickets from 10 per cent to 5 per cent, effective Jan. 1, and extending for another year, past the June 30 deadline, federal taxes on telephone calls, airline travel, and levies on liquor, beer, cigarettes, and automobiles.

Proposals for an immediate cut in corporate income tax rates and an end to all communications excise taxes were overwhelmingly rejected by the committee.

The Senate Committee also made a change in the House bill which would have ended the 10 per cent federal tax on "private" or "leased" wires. (The Senate bill contains the tax.) This does not affect news wire services, which are already exempt, but affects private line telephone service, private line teletypewriter services, and closed circuit TV and education TV systems. The administration has indicated it will go along with the House version of the bill, which would actually mean a little more tax revenue for fiscal 1963 than President Kennedy's original program.

USO Gives Award to CWA

Communications Workers of America AFL-CIO in Milwaukee have been presented with a Special Award by the United Service Organization (USO) for the "Hi-Mom" project through which servicemen at American military installations throughout the world are provided with free telephone calls at Christmastime.

Admiral Arleigh A. Burke, retired, former chief of U. S. naval operations and now USO's National Campaign Chairman, made the important comment that: "Communications are the lifeblood of a society of free men. Let it be remembered, that when the dictator makes his move for control, he first takes over the means of communications—all communications."

Try New Paystation

Residents in the Norfolk, Va., area may feel they are having ear trouble. Western Electric is testing in that area public telephones which make no "bong" when coins are deposited. When the tests are complete and changes are made, the new telephones will spread across the country. Western Electric estimates that production of the new type of telephone set will rise from 50 this year to 60,000 in 1963, and after that it will reach 120,000 a year.

Regard the Dream

"Dreams are the fool ideas of the day before yesterday that have become the commonplace miracles of today."—MELVIN JONES, *Lion* magazine.

DEPRECIATION —

A Few Unsolved Problems

By C. N. OSTEGREN*

Depreciation accounting was begun by some railroads and gas companies in the 1830's. After 100 years, in the 1930's, we saw a fairly general acceptance of straight-line accounting for the current depreciation expense. This acceptance involved federal and state agencies, industry (including most utilities) and the accounting profession.

Following a period of intelligent experimentation with depreciation accounting, progress turned downhill after the Civil War. Even the Supreme Court, in 1876 and 1878, refused to recognize depreciation as a proper operating expense. The upward climb began again in 1884 when the first System of Accounts was set up in the Bell System, but it took time for a clear understanding of depreciation expense to sink in.

Before 1912, straight-line accounting was firmly established in the Bell System. The ICC adopted it in its first System of Accounts for Telephone Companies in 1912. The Supreme Court accepted depreciation expense in 1909 (Knoxville Water Company case); Congress did likewise in the Corporation Excise Tax Act of 1909. Before 1940 the FPC and NARUC had adopted straight-line.

Downward Slide for Straight-line

But since 1940 the understanding of depreciation has suffered a downward slide. The Second Revenue Act of 1940 adopted the five-year amortization plan for war emergency facilities. This was sound, both in theory and in fact—but not always in practice. Particularly by the railroads, and some electric utilities, the amortization process was not used in the accounts, even though it was for tax purposes. This opened a veritable Pandora's box. In 1952, with the Korean war, the five-year amortization scheme was adopted again. But this time the rules for testing the emergency character of new construction were stretched beyond the breaking point, and much utility plant built during the 1950's was amortized in five years for tax purposes.

In 1953, Congress was asked by industry to adopt accelerated depreciation, on the ground that this was more "realistic" than straight-line. No doubt this is true for much of the manufacturing industry, but only to a small degree for utilities. The utilities, in fact, did not advocate this, but instead put in a strong case for recognition of the ravages of inflation, which Congress completely ignored. When, in 1954, Congress accepted accelerated depreciation it was adopted by much of industry, which also used it in their regular accounts.

In the utility industry, and among the commissions, confusion immediately arose, and it is getting worse constantly. Many utilities (excluding most of the telephone industry) have adopted accelerated depreciation for tax purposes, but since neither they nor the commissions regard this as "realistic," no utility, as far as I know, uses it in its accounts. You are all familiar, I am sure, with the accounting and rate making problems that this has raised. Strangely enough, although many people believe accelerated depreciation is a windfall for big business, utility companies (or their customers) are almost the only ones who have received a windfall from this act. It is clear that any company which finds accelerated depreciation realistic, and also uses it in its books of account, cannot receive a windfall from its recognition for tax purposes.

By now the philosophy of tax reduction gimmicks has become rampant. To the plea, made by chairman Mills of the Ways and Means Committee in a 1961 hearing, that the aim should be to find a way of determining the real income subject to tax, the counter theory was advanced that depreciation allowances should go beyond the realistic. Nothing but opportunism can justify recommending factitious schemes for greatly lowering the tax liability of certain corporations, with the result that the income tax *rate* for all corporations remains much higher than it otherwise would. Obviously those who cannot, or do not, use the gimmicks effectively get a tax increase.

Definitions of Depreciation Expense

Let's look at some of the official definitions of depreciation expense.

The Federal Power Commission's System of Accounts for electric power companies says: " 'Depreciation,' as applied to depreciable electric plant, means the loss in service value not restored by current maintenance, incurred in connection with the consumption or prospective retirement of electric plant in the course of service from

* Mr. Ostergren was formerly director of Engineering Economics for AT&T. He is now at Stanford University. A speech he made at the conference on "Public Utility Valuation and the Rate Making Process," Iowa State University, May 8, 1962.

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causes which are known to be in current operation and against which the utility is not protected by insurance. Among the causes to be given consideration are wear and tear, decay, action of the elements, inadequacy, obsolescence, changes in the art, changes in demand and requirements of public authorities." (The NARUC System of Accounts agrees with this).

The FCC System of Accounts for telephone companies reads the same as that of the FPC, except that it adds to the first sentence the words: "and the effect of which can be forecast with a reasonable approach to accuracy."

The definition used by the commissions was first adopted by the ICC as a result of its hearings on depreciation of railroads and telephone companies held during the 1930's.

The Internal Revenue Code of 1954 says: "General Rule.—There shall be allowed as a depreciation deduction a reasonable allowance for the exhaustion, wear and tear (including a reasonable allowance for obsolescence)—

(1) of property used in the trade or business, or

(2) of property held for the production of income."

Accounting Termnology Bulletin 1, issued by the American Institute of Accountants, says: "Depreciation accounting is a system of accounting which aims to distribute cost or other basic value of tangible capital assets, less salvage (if any), over the estimated useful life of the unit (which may be a group of assets) in a systematic and rational manner. It is a process of allocation, not of valuation."

In addition to these official definitions we should remember that many people think of depreciation as the process by which funds are raised to pay for the replacement of plant. Is it any wonder that many novel devices have been suggested for dealing with this problem when such entirely diverse definitions are used? The problem itself is entirely different depending upon the definition adopted.

Existing Depreciation

The discussion up to now has been about depreciation as an operating expense. There is also the question of existing, or cumulative, depreciation at a given time. This has, in particular, been a problem in rate cases, although it has sometimes been disturbing for other reasons. Let us consider primarily the rate case angles.

From 1898 to 1944 the Smythe vs. Ames case, in which the U. S. Supreme Court prescribed a "fair value" rate base, was controlling rate base in all rate cases in the United States. In this case, which occurred in Nebraska, William Jennings Bryan appeared for the Board of Transportation. The railroads claimed as a rate base "the present value of the roads, as measured by the cost of production," i.e., original cost. Bryan drew a distinction between cost and value. He said: "If, for instance, railroad owners can demand a return upon the original cost when the property has decreased in value, they not only have an unfair advantage over those who are subjected to competition, but may actually profit by conditions which are disastrous to others." A significant fact was that prices had been falling for 30 years, which may explain why the railroads argued for original cost and Bryan for present value.

Bryan's view prevailed and the court said: ". . . in order to ascertain that value, the original cost of construction, the amount expended in permanent improvements, the amount and market value of its bonds and stock, the present as compared with the original cost of construction, the probable earning capacity of the property under particular rates prescribed by statute, and the sum required to meet operating expenses, are all matters for consideration, and are to be given such weight as may be just and right in each case. We do not say that there may not be other matters to be regarded in estimating the fair value of the property. What the company is entitled to ask is a fair return upon the value of that which it employs for the public convenience."

Rate Set on Original Cost

It is ironic that in this case the railroads demonstrated that the 1893 law, which was in litigation, arbitrarily set rates for hauling freight which were so low that, had they been put into effect, the resulting revenues would not have covered operating expenses to say nothing about interest and dividends. This the court agreed to. Thus, the question of rate base was really academic, because there was clear confiscation without even considering rate base. And so this case became the law on rate base through an *obiter dictum*. Still more ironic is the fact that the 30-year price decline reversed in 1896; since then it has gone up for 65 years—except for a temporary reversal in the depression of the 1930's. Quite naturally, before 1910, utilities began to find fair value attractive, and many commissions entered into their long marriage to original (and some to antediluvian) cost.

However, the court's definition of fair value overlooked existing depreciation. It was not until 1909, in the Knoxville case, that the Supreme Court found that existing depreciation must be recognized. The Court said: "The cost of reproduction is not always a fair measure of the present value of a plant which has been in use for many years. The items composing the plant depreciate in value from year to year in a varying degree."

It should be added that the Court rejected completely the other measures of present value which had been offered in this case. Thus in 1909 reproduction cost-new less existing depreciation became firmly established as the basic measure of fair value for rate making.

Books of Account and Rate Cases

These decisions led to some interesting developments. The commissions tried to establish accounts and accounting practices which would show plant values, and accumulated depreciation, that could be used directly as a measure of fair value in rate cases. They generally attacked appraisals made by utilities as unsound. Utilities generally took the position that the accounts did not, and were not intended to, show the value for rate making since they did not recognize changing cost levels; nor the actual shrinkage in value due to depreciation. Thus the pulling and hauling on rate base—including the determination of existing depreciation—went on. They are still going on, although in the Hope Natural Gas case of 1944 the Supreme Court removed the U. S. Constitution as an umbrella over fair value. The states, however, have varying statutes from net book cost (or less) to reproduction cost-new, depreciated.

While it has always been impossible to determine reproduction cost-new, or existing depreciation, from corporate books of account, all companies since 1913 have had to develop depreciation expense every year for tax purposes; and many have also had to satisfy regulatory bodies, including the Securities and Exchange Commission, of the validity of the depreciation expense entered in their books of account. From this grew the practice by many companies of claiming depreciation expense, for rate making purposes, equal to that shown in their books, while at the same time claiming a fair value quite independent of book cost of plant and book depreciation reserve. This can lead to inconsistencies, and even to a disallowance of a substantial part of the depreciation expense which otherwise might have been above question. The Lindheimer case in 1933 is the classic.

In Illinois, the Illinois Bell Telephone Company had claimed, as existing de-

preciation, amounts substantially below the book depreciation reserves, but had used booked depreciation expense as part of its claimed operating expenses. The Supreme Court said: "In the light of the evidence as to the expenditures for current maintenance and the proved condition of the property—in the face of the disparity between the actual extent of depreciation, as ascertained according to the compreensive standards used by the company's witnesses, and the amount of the depreciation reserve—it cannot be said the company has established that the reserve merely represents the consumption of capital in the service rendered."

This case is unusual in that the Court accepted the company's measure of existing depreciation, but found that its depreciation rates had been too high. Depreciation rates actually used have, in general, been sustained in rate cases, but companies' claims of existing depreciation less than the book reserve have quite generally been rejected. But, either way, the basic inconsistency has been most troublesome, and has led to much litigation and dissatisfaction with rate regulation.

Post World-War II Accounting

Now, let's consider some of the things which have happened since war broke out in Europe in 1939.

(1) The five-year amortization of so-called "war emergency facilities."

(2) The 1954 Revenue Act.

(3) The Hope Natural Gas case, in 1944.

(4) Chronic inflation (the 1939 dollar was worth about $2.15 in 1962 dollars).

(5) Chronic high taxes (19% in 1939; excess profits taxes during the war; 52% since 1952.

It is quite clear that to the old questions:

What is depreciation expense?

How to determine depreciation expense rates?

How to measure existing depreciation?

there are now three additional questions which must be faced:

How does inflation affect depreciation expense?

How do we measure real investment in plant?

How do we measure real income?

A little thought will disclose that these are parts of one question:

How can we determine what is happening in our economy when the dollar is unstable? This is not a frivolous question.

The substantial depreciation increases allowed under the 1954 Revenue Act were considered "realistic," but their main purpose, as declared by the Congressional Committees, was to help small business and farmers to raise capital.

Beginning with the next recession after 1954, there has been an insistent clamor for more of the same, in order to modernize our plant.

More and more businesses now realize that capital is being confiscated through taxes ostensibly on income.

The use of one measure of depreciation for tax purposes and another in books of account has undermined long accepted methods of measuring income.

On the present basis of accounting, almost every business reports artificial profits. This greatly exaggerates the rate of return and makes it difficult for commissions to set appropriate prices for utility services.

Books of account, as now maintained, do not disclose the *real* investment in plant, nor the *real* amount of capital in the business.

A Cure for Rate Evils

What should be done about these things? Quite obviously, to cure all these evils (even if all concerned were to recognize them as evils, which is far from the truth today) would require some major changes. A fundamental change in the tax law; revisions of systems of accounts prescribed for utilities; a new approach to rate making; all of these would be required. But more important, a basic change in thinking on the part of many people would be required. Nevertheless, I am going to outline changes which *would* cure all of these things and I am going to indicate how simple the job of changing would be, given the will by all concerned. I am not going to claim that these suggestions are the best that can be made, nor is there room in this paper to deal with various objections to them which have already been brought to my attention. But I will point out that these suggestions have been distilled from 40 years of study of depreciation in the context of planning and managing investment in utility plant, and that I don't know of any better ones.

New Definitions Proposed

The word "depreciation" should be eliminated from systems of accounts and from accounting terminology. There is no way of measuring depreciation occurring year by year, nor is there any way of measuring existing depreciation which would be suitable for accounting purposes. Let us face the plain fact that there is no accounting need for either of these measures.

All that is needed is to establish, and consistently follow, some reasonable plan of amortizing the investment in plant. The expressions "amortization", "amortization expense" and "amortization reserve" seem appropriate for this purpose, but there may be objections because of the particular use of this word in the five-year amortization scheme which has been used for tax purposes.

Another possible name for this would be "capital repayment," which would tend to recognize that it is a previously incurred capital obligation which is, in effect, being paid off, rather than a future replacement cost, which has no legitimate place in today's expense accounts. (This is not to say that managements may ignore the problem of replacement; it is most important that they take a realistic view (1) of the time when replacement will occur, and that they recognize this in the rates they use for charging plant investment to expense; and (2) in their dividend and pricing policies. Much of this is also a real problem for commissions). Although the solution of this same problem is really up to the accounting profession, which is entirely competent to modernize its terminology, we shall a little later discuss an approach that leads naturally to a name change.

When to Charge Salvage Costs

I think there is universal agreement that investment in plant should be charged to operations during the useful life of the plant. But there are questions about the treatment of salvage and removal costs; and there is serious disagreement regarding rate schedules even when there is agreement regarding estimated plant lives.

As to salvage and cost of removal the solution is absurdly simple: all that is required is to ignore them completely until the plant is retired. The *actual* salvage should be credited to operating expense, and the *actual* cost of removal debited to expense when the removal, or other final disposition, has taken place. In utility companies, at least, there are three reasons for doing it this way:

(1) Net salvage, i.e., salvage less cost of removal, in any one year is normally small; and it may be either positive or negative.

(2) It is very difficult to support estimates of salvage and removal costs, particularly for property units whose lives are expected to terminate 25, 50 or more years in the future. In fact it often costs more to estimate net salvage than what is

actually realized from it.

(3) There appears to be no good accounting reason for treating, as current operations expense, expenditures and receipts which may or may not occur at some distant future date and the amount of which no one can now know.

But even if net salvage is disposed of as suggested, there is still the problem of agreeing upon service lives; and if basic life estimates are agreed upon, there is the still more difficult problem of converting the lives of thousands of property units into rates to be used for charging plant to expense in the accounts and in the income tax returns. As to lives, company managements, who don't claim clairvoyance, but who are fully aware of the risks of obsolescence, often find that commissions and tax people like to substitute their judgment in favor of longer lives. These managements are thinking of the financial health, both now and in the future, of their companies, while those government people are thinking of lower prices to the consumer *today*, or of higher tax collections *today*. Unfortunately, there are other managements who are so concerned with earnings *today* that they use longer lives for book purposes than for taxes, and also use methods for tax purposes which produce the maximum deductions now, regardless of the future.

Different Kinds of Expenses

This confusing state of affairs arises from failure to realize fully how different one kind of expense is from another. Expenses which take the form of cash payments for labor, material, rents, utility services, etc., are one kind. Certainly all will agree that a major responsibility of management, and one which can never be relaxed, is to minimize these expenses at all times, subject only to providing the best of service and acting as good citizens toward employees, customers, and the public.

But capital repayment is quite a different matter. The cost was incurred when the investment was made—not when it is charged to operations. Costs will be minimized only if the best possible, i.e., the most economical, construction program has been and continues to be, followed. And it should be remembered that "most economical" does not necessarily mean "lowest first cost." The point is that the investment in plant is what determines how much must be charged to expenses to repay the capital. There can be no reduction in expense by lowering the rate of this expense. If the rate is lower today that can only mean that it was higher in the past, or that it will be higher in the future. It is like a rubber glove filled with air: if one finger is squeezed, another finger will swell.

Spread Charges Over Life of Plant

In this situation the question is: when should the plant investment be charged to operations? It is logical to spread the charges over the useful life. This may be done "as evenly as may be," by the straight-line method. In the early days this was done by obtaining from various experienced people their opinion as to the probable average life of the plant. Sometimes one average life for the entire property was used.

This method seemed perfectly all right at first, but it was soon discovered that if a separate rate was set up for each plant class the composite rate was higher; and then it became evident that if further breakdowns, by types, were made, the composite rate was still higher. The reason for this, of course, is that some of the investment in short-lived plant was spread over the life of longer-lived plant, long after retirement of the short-lived plant. Even today, when the effort is to break plant down, at birth, into groups that are believed to be homogeneous from a life expectancy standpoint, the dispersion of retirements by age within a group is, for some classes of plant, very wide. This suggests that the straight-line method inescapably results in today's plant carrying a substantial part of the cost of plant already retired.

But this need not be so. In companies which have long studied the life behavior of plant, the so-called retirement dispersion pattern is well known. Given this knowledge, the future dispersion pattern can be developed with about the same degree of certainty as average life. This means that a new way of grouping plant is available, i.e., into equal-life groups. Of all the plant placed in service this year, for example, a specific percentage is expected to have one year of life, another specific percentage will have a two year life, etc., to, say 50 years or more. Each of these groups will have its own component depreciation rate—the first group 100%, the second 50%, and so on, with two per cent for the 50th group. If each such equal-life group of plant is charged to operations during its life in this manner, existing plant will never need to help carry any plant already retired. This, then, is a fulfillment of the straight-line objective—to spread the cost over the life of the plant "as evenly as may be."

It should be recognized that plant, under this plan, will have a higher rate of repayment when it is young, and a steadily falling rate as it grows older. This is because a vintage—i.e., plant placed in one year—loses short-lived units as it grows older, until none but long-lived units are still in use. Hence, the composite rate for all of the plant vintages tends to be somewhat higher when growth rates are rapid (much young plant) and somewhat lower when growth falls off (more older plant). This, of course, is a good thing, in that operating expenses are somewhat relieved when business is poorer, and vice versa.

Another important fact is that the use of higher rates when plant is young has great advantages to all concerned. The company's financing will be easier because it will not need to raise quite as much new capital for growth. This will also make the company stronger financially and thus better able to weather hard times. But, more important, the customers will be ahead in the long run. This is because the capital invested will always be smaller since the reserve builds up faster when the plant is young. In other words, the faster capital repayment will be offset by lower requirements for return and income taxes. It follows that, if this method is introduced now, in some eight or ten years the total required for return and capital repayment will be less than under present methods. (This assumes that rate of return remains the same and that the relationship between rate base and net book cost remains the same).

Rates Under Group Plans

The plan, which I have been calling the equal-life group plan, and which some have called the unit-summation method, is a refinement of the so-called vintage-group plan, now in common use. Both are forms of the straightline method. But the equal-life group plan has the significant advantages over the vintage plan which we have just outlined.

In order to develop "depreciation rates" under the equal-life group plan (ELG), the basic statistics of plant mortality characteristics by plant classes are kept under continual study, exactly as is done under any method. Both the retirement characteristics displayed during successive short periods in the past, and the survival pattern to date of each vintage, are developed and analyzed (which is part of today's engineering work). Armed with this information, the engineers, who also must be familiar with the plans for the future which the company has, project (as they now do) the survival pattern of each vintage, by plant classes. The simplest way from then on is to combine the various plant classes in order

(Continued on page 44)

Accounting Policies Affected by Rate Situations

By WILLARD F. STANLEY*

IT IS GENERALLY recognized that accounting policies can substantially affect both cash and book earnings of telephone companies. Although many of these policies are fixed by the accounting regulations, there are quite a few where the telephone system has a choice between two alternative methods, having different effects upon cash and book earnings.

Except in the case of liberalized depreciation, none of these items involve an increase in cash earnings, the alternatives being between charging the item to income or capitalizing it by treating it as a property addition. In the latter alternative, the charge to income is reduced and net income increased, and the plant account accordingly increased. This reduces cash earnings by increasing income taxes.

The larger telephone companies with publicly held common stock, are usually interested in increasing book income, even when no increase in cash income is involved, since higher book income tends to increase the price of the common stock of the company, both directly and indirectly, by tending to increase dividends because of the increase in the earnings from which they are paid.

Smaller Companies

But the much larger number of smaller companies, without public participation in their common stocks, usually look with disfavor upon increased book earnings, unless accompanied by an increase in cash earnings, since the former merely tends to weaken their position from a rate-making standpoint.

While, therefore, the larger companies generally tend to follow accounting policies which will produce the maximum book earnings, the smaller companies should carefully consider the policy to be adopted, in the case of these alternatives, in the light of their rate situation.

W. F. STANLEY

For example, if a company is now vulnerable as to rate of return, obviously any increase in book earnings (without a rise in cash receipts) would simply increase the existing vulnerability without any offsetting advantage. Even if such a system were merely in the area of vulnerability in respect of rates of return, an increase in book earnings would tend to bring the figure closer to the point where some adverse action on the part of the regulatory commission might ensue.

In those cases, where the rate of return is definitely below normal, the smaller company need not have the same fear of increasing book earnings, but even here, it might be contended that, by adopting a policy of increasing book earnings with no corresponding benefit to cash income, it was reducing the "cushion" which previously existed as a defense against adverse rate action, without any compensating benefit.

Plea for Increase

Then, too, if the rate of return were unusually low, the company might have in mind a plea for an increase in rates, which would be adversely affected by increasing book earnings and might, thereby, be made either more difficult or completely impracticable.

Of course, all telephone companies already have adopted policies as to the matters covered by the foregoing discussion, although, in some cases, the policy may have been adopted without too much consideration of the pros and cons. What is needed at present, therefore, is a careful reconsideration, particularly by the smaller companies, of the policies adopted and the determination whether, under present circumstances, it would be advisable to continue or to change such policy.

Six items come to mind as representing accounting policies where the decision is optional with the telephone company. These items are as follows:

(1) Whether or not to capitalize interest during construction.

(2) Whether or not to capitalize taxes during construction.

(3) Whether or not to capitalize pension plan expense applicable to construction—in the case of large systems having pension plans.

(4) Whether or not to capitalize the portion of wages of clerical and other permanent employes applicable to construction.

(5) Whether to treat certain expenditures as maintenance or as additions to property.

(6) Whether to follow the "normal-

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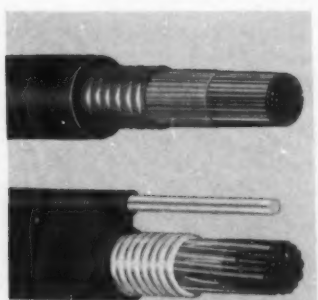

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ization" treatment or the "flow through" treatment in the case of liberalized depreciation.

Impact Discussed

The impact of the foregoing items is discussed below, in their order:

(1) This item is unique in two respects.

First, it does not, like most of the others, involve a loss in cash income if the item is capitalized. This is because the company is given the option of not treating the credit to income, which offsets the amount capitalized, as a part of taxable income.

Second, capitalization should not involve any increase in income for rate purposes, since the practice is to insert the credit to income of the amount of interest during construction "below the line", i.e., it is deducted from interest expense, amortization of debt discount and expense and other income deductions. Therefore, if they avail themselves of the above mentioned tax option, the small companies should have nothing to lose in the way of either reduced cash income or increased book income by capitalizing interest during construction.

In so doing, the companies would, of course, be increasing their rate base to the extent of the amounts capitalized, which would increase the amount of return to which the companies would be entitled. The increase in allowed return by reason of such capitalization should increase annually as additional interest is capitalized. This is equally true as to the annual increase in rate base and in allowed return thereon with respect to the capitalization of items (2) through (5) below.

Ad Valorem Taxes

(2) This item deals with capitalizing ad valorem taxes applicable to property during course of construction and is applicable only in those states where it is legal to tax such work in progress. The amount of taxes capitalized increases the rate base and reduces tax expense, thereby increasing book income. Cash income is decreased to the extent of the higher income taxes payable because of the smaller amount of deductible taxes.

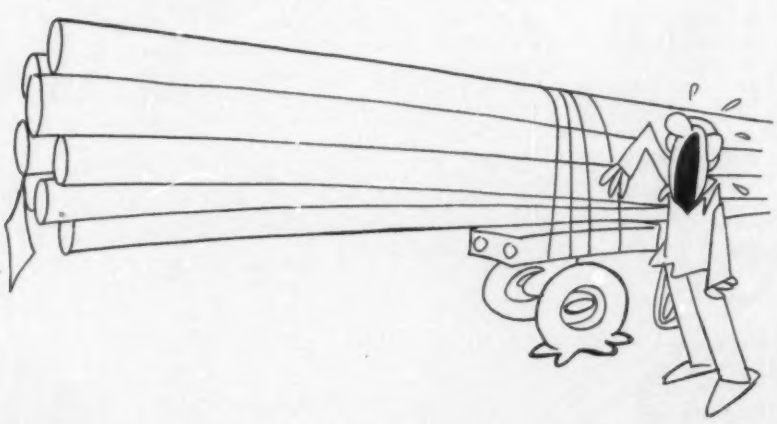
(3) This item applies only to larger companies having pension plans for their employes. The amount capitalized is the portion of the pension plan contributions of the company applicable to wages paid with respect to time devoted to construction work.

As in the case of capitalized taxes during construction, the plant account and rate base are increased, book income is also increased and cash earnings are reduced to the extent of the higher income taxes, due to the smaller amount of pension plan expense deducted for taxes.

(4) This item applies to capitalization of the portion of the wages of permanent employes who are engaged in construction services for a part of the time. As in the case of the two last discussed items, rate base and book income are increased by such capitalization and cash income is reduced by the increase in income taxes due to the decline in wage deductions for tax purposes.

Proper Category

(5) Accounting regulations are usually sufficiently definite to place various expenditures in the proper category as between maintenance expense and additions to property. Cases may arise, however, of a borderline nature where the decision as to the proper category must be made by the telephone company.



The impact of treating such expenditures as additions to property is the same as regards item (2) through (4), in that the rate base is increased, book earnings are enhanced, and cash increment is reduced by the lower amount of maintenance deductible for tax purposes.

(6) The choice of telephone companies in the case of treatment of liberalized depreciation is limited to the approximately one-third of the states where regulatory commissions have not yet adopted a decision as to the proper treatment of this item for rate and accounting purposes.

Additional Option

Furthermore, liberalized depreciation involves an additional option in the case of all telephone companies, i.e., whether to adopt or reject it as to the additions made in any year. The option as to adoption or rejection of liberalized depreciation applies to additions for future years, the decision being made with respect to the additions for each such year.

Once a decision has been reached for a particular year, the property additions in that year must remain either subject to or apart from liberalized depreciation, according to the original decision, for the entire life of the property.

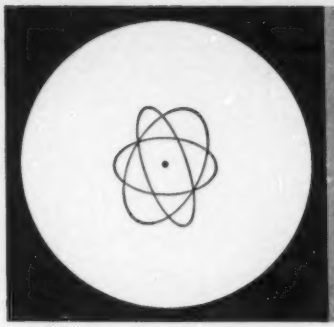
The decisions with which telephone companies are faced, therefore, are, first, whether to adopt liberalized depreciation as to additions in any one or more future years, and, second, to decide as to the accounting treatment desired in cases where this decision is left to the telephone company.

'Flow Through' Method

Adoption of the "flow through" method increases book income to the extent of the deferred taxes. There is also, however, an equivalent increase in cash income. If "normalization" is decided upon, there is no change in book income but cash earnings are increased to the same extent as if "flow through" had been chosen.

Unless the policies in effect with respect to the foregoing items have been given recent consideration, the matter seems well worthy of serious review to ascertain whether any change in existing policies might be beneficial to the company under then existing conditions.

The matter of rate-making is of paramount importance to telephone companies and it appears that this factor (both present and prospective) should dominate the decision as to the accounting policy to be followed.



TELEPHONY'S ELECTRONICS SECTION

BY PAUL E. MURPHY, ELECTRONICS EDITOR

"MASER AND LASER"

TO MEET THE ever growing demands for a multitude of communications services, new developments must occur. In the past two decades or so, several new advances have occurred, and are still occurring, which will have and are having major impact upon the communications art. These advances in technology are expanding so rapidly that many technicians, as well as engineers, find it most difficult, and often almost impossible, to keep up with the changes.

Two relatively new devices that are certain to have a major effect upon the communications art are "Masers" and "Lasers", both of which are acronyms. "Maser" is an acronym for Microwave Amplification by Stimulated Emission of Radiation. "Laser" is in the same category except the word "Light" replaces the word "Microwave".

It is not the intent here to give an engineering treatise on these developments, but only a basic understanding of the principles, applications and advantages they offer.

In a recent article published by Cleveland Institute of Electronics, "What's New In Electronics", Fred E. Eberlin, project director, presented a general discussion of these new devices.

Mr. Eberlin explained, "A new electronic device, the Maser amplifier, without much doubt will help immeasurably in making possible communications not only with satellites far out in space, but also with other planets as many as 50,000,000,000,000,000,000 miles from Mother Earth, should there be anyone on them with whom to communicate."

All of this is possible as a result of the device being able to work nicely at frequencies in the 450 million megacycle portion of the spectrum and having lower noise levels than any other known devices that may be used as amplifiers. Vacuum tubes, as is well known, will operate only to frequencies in the neighborhood of 100,000 mc. with unique design and "tightly" controlled modes of operation.

"Four hundred fifty million megacycles being the frequency of visible light, output of a maser operating at this value is visible and under such conditions the amplifiers are known as Lasers or Optical Masers.

To extend the appreciation of the Laser it was pointed out that even a small device being used as an oscillator and having only a few milliwatts output is capable of producing a beam of light bright enough permanently to blind a person. "Its beam is so powerful it will shine through 40 sheets of ordinary writing paper, while flashes can be seen for 25 miles," Mr. Eberlin further pointed out. Having given this basic understanding of what can be performed by the Optical Maser, Mr. Eberlin then brought out its many advantages.

"What are the advantages of operating at such whopping high frequencies? One is that they can be focused into an extremely narrow beam. In communicating with an object out in space—a satellite, space ship, capsule, or what have you—little power will be required because, except for losses in the atmosphere, every bit of radiated energy will be picked up by the object at which it is focused.

"Another advantage, while somewhat more mudane, involves freeing up the extremely crowded, earthbound communications channels now in use. The higher frequencies would vastly increase the number of useful channels."

For an appreciation of this advantage, Mr. Eberlin pointed out that by using the Optical Masers, operation of a 10,000 channel TV relay system could be realized and considering 6 mc spacing, all channels would require a total frequency band of 60,000 mc. "At 450 million mc., however, it would be only a tiny part of the available frequencies," Mr. Eberlin explained.

Other uses of the Optical Maser, where advantages could be obtained over existing methods, would include radar where information "reflected back into the viewing screen may be nearly as detailed as me on a TV picture tube," surgical aids in hospitals that "probably will be able to use the finely focused beam from an Optical Maser for more precise incisions during operations than are now possible." Mr. Eberlin continued:

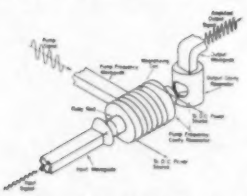
"Basically, the Maser is a simple device. The theory behind it, however, is not. In its most common form, the Maser's heart is a rod of ruby, perhaps a quarter of an inch in diameter and 1 inch long.

"When used as an amplifier it is kept at a temperature near absolute zero (459° below zero F) by a bath of liquid helium. The rod is usually operated within a strong magnetic field set up by a series of coils.

"Into it is coupled a source of microwave energy known as the "pump frequency" (see the accompanying line drawing of a typical Microwave Maser). When this ar-

rangement is properly set up, a weak microwave signal within a certain range of frequencies (differing from the pump frequency) will, if coupled into the ruby rod, be re-emitted by it, but at a much higher power level.

"In other words, under these con-



Parts of a ruby-type microwave maser amplifier. Entire unit operates submerged in liquid helium.

ditions, the ruby rod acts as an amplifier, the operating range of which can be changed by varying the intensity of the magnetic field."

The advantages of the Maser and Laser devices, as pointed out by Mr. Eberlin, should far outweigh the costs and awkwardness of equipment where applications at microwave frequencies require low noise contribution to an already weak signal.

TEST EQUIPMENT

ELECTRONIC Instrument Co. Inc. has recently announced the availability of an advanced general purpose oscilloscope.

The new 5-inch scope Model 427 is said to have all the facilities and performance quality required for general laboratory work, production listing, advanced home workshops, ham shacks, and many other operations.

Features claimed for the equipment include:

(1) Vertical amplifier direct-coupled (for minimum phase distortion) and push-pull (for maximum linearity) throughout (six stages in three push-pull pairs). Choice of direct or capacitive input coupling. One internal bias adjust, and a dc balance adjust on the panel, for simple adjustment to optimim performance.

(2) Four-position (plus CAL) frequency-compensated vertical input attenuator—Saw-tooth (sweep voltage) output jack on panel for convenient connection to vertical input jack when adjusting the frequency-compensation trimmers.

(3) Intensity, focus and astigmatism controls on the front panel. Clean trace-free of blooming. Instantaneous, drift-free positioning permits centering and part of a

General purpose oscilloscope.

trace expanded to 30 cm vertically or 20 cm horizontally.

(4) Easy, direct connection to vertical deflection plates without need of removing and replacing shorting links of wires. Test leads are plugged onto jacks at rear, and a nearby switch is thrown from Amplifier to Direct Plates.

Specifications also include: Vertical amplifier response flat for dc to 500 kc with —6 db at 1 mc. and having sensitivity of 10 mv p-p or 3.5 mv rms. per cm; vertical amplifier input impedance 1M ohms shunted by 30 mmf; horizontal amplifier response flat from 2 cps to 450 kc and having a sensitivity of 0.5 volts p-p or 0.18 volts rms per cm; horizontal amplifier input impedance 10 ohms shunted by 40 mmf.

NBS DEVELOPMENTS

IN ORDER to permit reception of radio transmissions from WWV, Beltsville, Md., or WWVH, Maui, Hawaii, without interference from the other, minor changes in broadcast schedules are being conducted.

The National Bureau of Standards announces that changes in WWVH broadcasts are to become effective July 1, 1962 and are as outlined:

PRESENT SCHEDULE:

"Continuous except for four three-minute silent periods each hour, the first commencing on the hour and the other three on each quarter hour thereafter, and a 34-minute silent period each day at 1900 UT.

PROPOSED SCHEDULE:

"Continuous except for one hourly silent period from 15 minutes to 19 minutes past each hour and a 34-minute silent period at 1900 UT.

Station WWV would retain its present schedule including the silent period from 45 to 49 minutes past each hour to affect the possible reception of one station without interference from the other.

It was also explained that, "A change in the transmission of the binary time code from station WWV will be made so that the amplitude between pulses on the 1 kc sub-carrier will be about one-third of full amplitude instead of going to zero."

GASEOUS MASERS DEVELOPED BY BELL

TWO NEW gaseous optical masers—one using a mixture of neon masers—one using a mixture of neon and oxygen, the other of argon and oxygen—have been announced by Bell Telephone Laboratories. Both devices radiate in the near infrared at a wavelength of 8446 angstroms. This marks a major technological advance because the underlying physical principle suggests the advent of a whole new family of gaseous optical masers. Also, it immediately provides a new frequency for optical communications.

Optical maser action in neon-oxygen and argon-oxygen is made possible by "dissociative excitation transfer." It is the first time that this excitation mechanism has been used in an optical maser.

A letter in the current issue of *Physical Review Letters*, a publication of the American Physical Society, by William R. Bennett, Jr., Walter L. Faust, Ross A. McFarlane, and C. Kumar N. Patel, describes dissociative excitation transfer wherein an excited atom of a noble gas, such as neon, breaks up an oxygen molecule. To operate the masers, the Bell Laboratories scientists mix molecular oxygen with neon or argon and excite the mixture with a radiofrequency discharge. Energy transferring from the neon or argon to the oxygen molecule results in its dissociation into two atoms. One of these atoms attains an excited state, either immediately or very shortly thereafterwards, from which it radiates the 8446-angstrom line.

Maser oscillation takes place in a quartz-tube resonator which is a modification of the one used for the original gas optical maser experiments conducted at Bell Laboratories. The present device is a two-meter long tube with external confocal mirrors which also were developed at Bell Laboratories. The masers contain a ratio, by pressure respectively, of approximately 70 to 1, neon to oxygen, and approximately 40 to 1, argon to oxygen. In both cases output power is about two milliwatts.

The experiments suggest that the mechanism of dissociative excitation of a molecule by energy transfer from a metastable atom may be more generally useful in optical maser technology than the inelastic atom-atom collisions responsible for maser action in helium-neon mixtures. In the latter case, electrons in the discharge created by the rf generator excite helium atoms to their metastable state, which is comparable in energy to an upper state of neon. As a result, the helium atoms can impart their energy to the neon atoms by collisions. The neon atoms then radiate to a lower energy level, creating the maser oscillation.

GT&E DISPLAYS NEW ELECTRONIC DEVICES

One telephone company and its subsidiaries recently demonstrated several electronics devices at the annual convention of the Armed Forces Communications and Electronics Association in Washington, D. C.

The first solid-state microwave radio system adaptable for space communications was demonstrated by General Telephone & Electronics Corp. It was among a variety of advance communications, data processing, data transmission, and electroluminescent systems and devices integrated into a 60-foot joint display of four GT&E subsidiaries—Automatic Electric Co., General Telephone & Electronics Laboratories, Inc., Lenkurt Electric Co., and Sylvania Electric Products.

The solid-state system, which is composed of transmitter and receiver units, represents a complete communications package that could be utilized within a so-called "synchronous" satellite network for relay of intercontinental telephone calls, business data, or television programs.

The first solid-state microwave radio system adaptable for space communica-

A satellite network of this type would utilize active repeater satellites in a 24-hour synchronous orbit. In conjunction with ground stations strategically placed around the globe, the network would provide virtually instantaneous world-wide communications.

Both the transmitter and receiver units were developed for the Air Force by Sylvania Electronic Systems.

The compact transmitter unit, which is less than the size of a cigarette carton, is the first solid-

state transmitter designed to operate with two watts of output power within the S-band (1700 to 2300 megacycles). These are considered to be the minimum power and frequency requirements for penetration of the atmospheric blanket which surrounds the earth.

Another electronic device designed to solve a basic space communications problem—an advanced "echo suppressor"—was shown by Lenkurt. The device is designed to "silence" echoes which would occur in satellite telephone conversations.

The echo suppressor has proved highly successful during prototype tests, and is scheduled to undergo extensive operational testing next year under an Army Signal Corps contract. The new suppressor also has been made commercially available by Lenkurt for use in long distance telephone communication circuits.

Also demonstrated "live" at the display was a continuous wave, sealed gas laser, made available to military and commercial customers in March through Sylvania's Microwave Device Division. The new component represents a unique design of a well-defined coherent, infra-red radiation source of extreme broadband information carrying capability.

Lenkurt showed its advanced electronic telecommunication system, the 600-channel AN/FCC-17. The military multiplexing system was conceived by the U. S. Air Force as the universal standard multiplexer for its huge 480L global communications program.

The AN/FCC-17 is also utilized within the Air Force's 412L semi-automatic command and weapons control system, and the airborne command post program of the Strategic Air Command. The system will fit into networks throughout the world, and will handle voice, data or graphics.

GX terminal connecting unit for simplifying the method of connecting telephone lines to telephone exchange trunks.

A new GX terminal connecting unit which is expected to simplify substantially the method of connecting telephone lines to telephone exchange trunks was featured in the display. Designed for mounting near ground level on telephone poles, the all-weather unit is expected to reduce costs and improve service. It is also expected to have applications in commercial and military electronic equipment.

Developed by the General Telephone Co. of Calif., the terminal connecting unit utilizes a small pin which is simply inserted into the punchboard-type unit to complete the circuit. It is being manufactured by Sylvania Electronic Systems under a contract from Automatic Electric Sales Corp., which is marketing the unit.

The Automatic Electric portion of the display, which depicted the various uses of Automatic Electric switches and relays in government and industry, highlighted a postage-stamp-size Series MM-22 Microminiature Relay that introduces a new level of reliability in military relays. The company's switches and relays are currently being used in technical research, aeronautics, telemetering, instrumentation and analysis.

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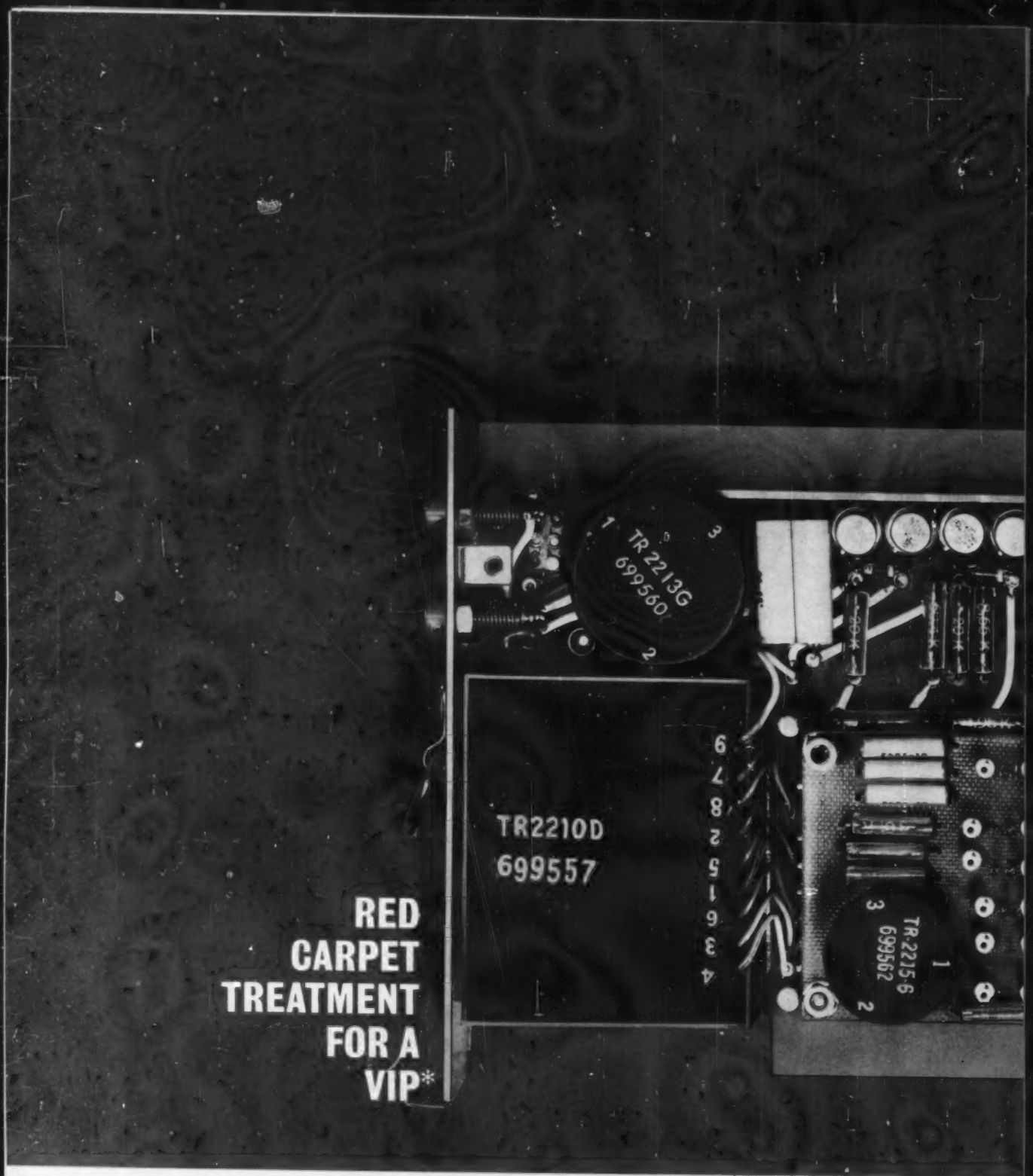

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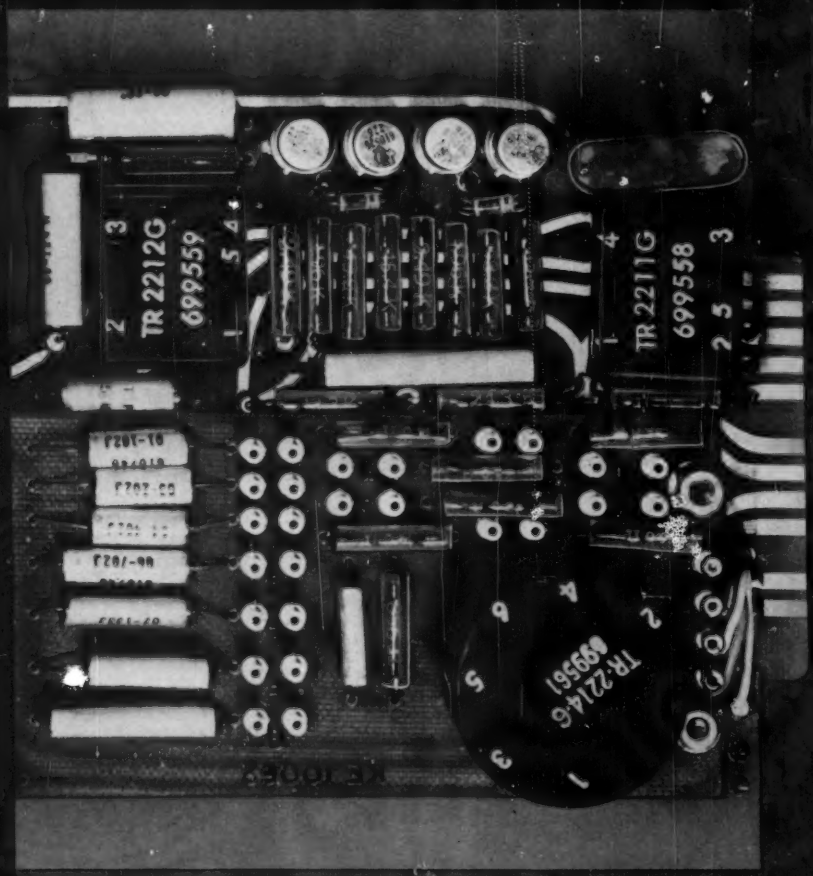

the first one designed for use with both H88 and D66 loaded cable

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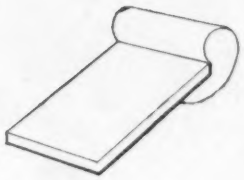
The Plant Man's NOTEBOOK



By RAY BLAIN, Technical Editorial Director

IT IS RATHER AMUSING to note how English-speaking people have adopted different names for certain things in various areas. Our good friends, the Australians, for example, talk about "joining" cable while we "splice" it. We "trim" trees while they talk about "lopping" trees. They mention a "pillar terminal" while we call it a "pedestal". Their street "public telephone cabinet" is our "outdoor type booth".

Here, in the U. S., our telephone terms are rather standard, but we do have different names for other items in various areas. Some time ago, this writer asked a clerk in a store on the eastern shore of Maryland if she would put a purchase in a paper "sack". She said, "I think you mean a paper 'bag' ". Then, in other areas, it is called a "poke". We also stopped at an old mill on the Eastern Shore and asked about buying some finely ground corn. They said they did not have any, but could sell us some finely cracked corn. We later learned this was just what we wanted.

•

To attract attention, we are advised to lower our voices. The group whispering in the corner is much more intriguing than that little knot of people arguing loudly in the center of the room. Too, a lowered voice is much more persuasive.

It is further claimed that few sales were ever made by desk pounding, and fewer girls ever said "yes" to a high-decibel plea.

•

Centrex telephone service is now in operation in two of four Los Angeles banking institutions that have requested this modern innovation in communications systems. Centrex has been in use for some time at two Los Angeles locations—offices of the State of California, and the new International Airport. These concerns have 5,000 telephones in the Centrex network.

Centrex was developed by Bell System engineers when it became apparent that many of the larger business organizations were running into a problem with the large volume of calls that required manual handling on PBX systems. This system (Centrex) is especially tailored for business firms with from a minimum of 300 lines to a maximum of about 10,000.

Centrex basically accomplishes two things:

(1) It provides an individual number for each telephone; and (2) it permits almost 90 per cent of incoming and outgoing telephone traffic to bypass switchboards. One party within the network can call another without operator assistance simply by dialing the last four digits; and, most important, the customer can call direct to the individual he desires. The PBX switchboard is reduced to a job of receiving and routing incoming calls not directed to any one individual.

A unique innovation of the Centrex system is the ability to transfer calls received from the outside to another internal telephone without operator assistance. When a customer calling from the outside reaches a wrong party on the company's telephone network, he can be transferred by the receiving party. This is accomplished by dialing "1" and the last four digits of the intended number while the customer stays on the line. The intended recipient of the call answers; and original receiver of the call has 30 seconds to explain the call, and introduce the calling customer. After the 30 seconds, the original receiver is automatically disconnected.

'Un-Togetherness'

The views expressed in bylined stores are not necessarily those of the magazine that prints them. Therefore, it is possible for two conflicting views to appear not only in the same magazine, but also in the same issue.

This happened in the June 23 issue—but we were aware of it. On page 24, Gilbert R. Brackett, in discussing the use of the word "Hello" to open a telephone conversation, said it is just about as "meaningless as tooting your car's horn in a traffic jam. . ." On page 42, Ray Blain said it "is a good and easily understood word, and we could not suggest a better one."

•

The General Telephone Co., of Michigan has sponsored an Explorer Scout Post, formed last December for boys interested in electronics as it applies to communications.

To qualify for membership in the post, boys must be 14 and in the ninth grade, or higher; or 15, regardless of grade. Membership may be continued through age 17, regardless of grade, or as long as the boy continues as a full-time high school student. No previous scouting experience is required.

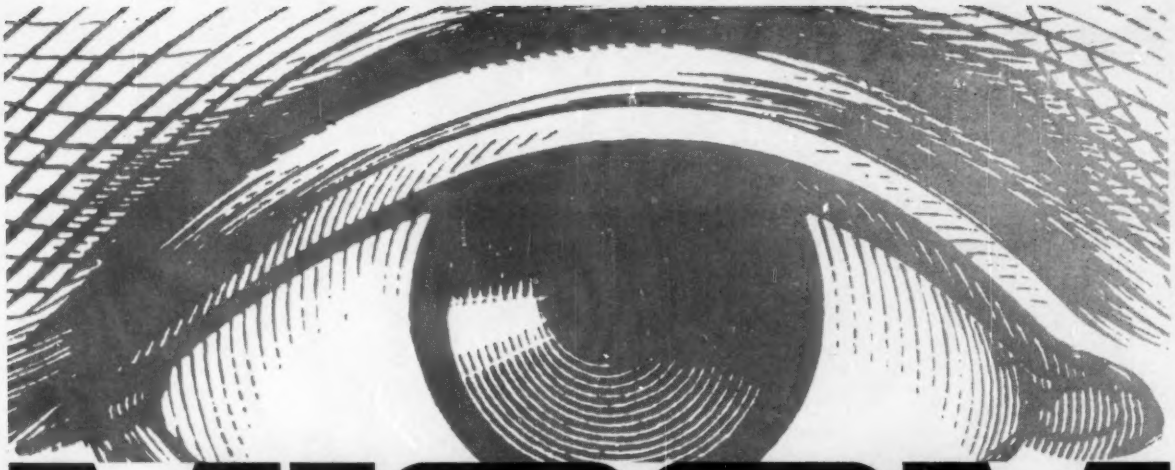
•

Who would believe that 28,000 feet of submarine cable, weighing 6½ pounds per foot, could be laid without the use of a boat? Well, this feat was accomplished by the Canadian Bell when cable was recently installed across Trout Lake. The 20-ton cable reels were delivered on trailer trucks that drove out on the 26-inch thick blue ice that had formed over the 210-foot deep lake.

After the cable was paid out, the splices were all completed and encased in watertight submarine splice boxes. Air was then forced under the cable sheath and the pressure maintained until it was determined that the cable was air-tight. Contractors then set to work with power saws to cut a trench about eight inches wide in the ice. The cable was then carefully lowered into the deep cold waters of the lake. This work was accomplished at temperatures of about 40 degrees below zero.

"Cross Talk"

College kids away from home consider the family telephone a collector's item.



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New Developments in Telephony

By RAY BLAIN

THIS IS THE fourth article in a series describing various new items of equipment and their application in telephony. The third article appeared in the June 23 issue.

Readers desiring additional information on any of the products described should write the manufacturers or TELEPHONY.

* * *

HOME INTERPHONE SYSTEM (Fig. 19). A completely transistorized, full duplex home interphone system which also provides door answering service is now available from Orbit Industries, Inc. The system uses telephone components, epoxy glass printed circuitry, and rated electronic parts.

This system provides operation without push-to-talk and hands free service for receiving. The control unit provides talking battery for the system without connection to the outside telephone system. It also contains a high gain microphone amplifier and a separate speaker amplifier, both combined in a transformer hybrid to permit a two-wire connection to the telephones on the system.

A separate U/L approved power transformer is furnished with the control unit and provides 16-volt ac. A transistor switching circuit automatically de-energizes the control unit when the telephone is "on hook". Any number of telephones may be used on the system.

The remote unit is weather-proof and consists of a plastic case containing a dynamic microphone and speaker. Up to four remote units may be used in the system and they may be installed in areas without an extension telephone, if desired. Conversations are all originated by the use of a telephone. When door answering and intercom service is combined in the system, a relay switching unit SD-5 is required.

In addition to home use, this system may be used for meeting special requirements in the office, storerooms, hospitals, hotels, motels, room door answering, and apartment door answering. It may also be used through PBX and PABX systems.

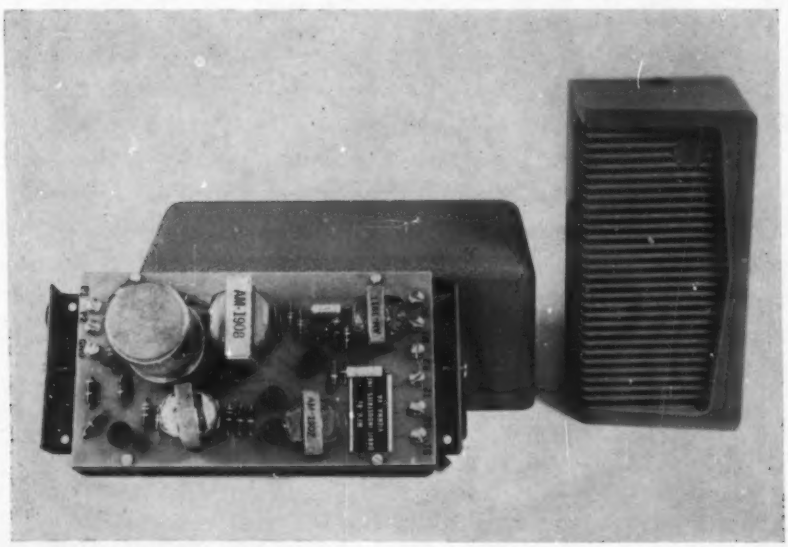

Fig. 19 Home interphone system

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DUPLEX SINGLE FREQUENCY SIGNALING UNIT (Fig. 20) The Collins Radio Co. has announced the availability of a duplex single frequency signaling unit (S.F. Set) type 20D1-1MX used for telephone signaling and supervision in voice carrier systems. The unit converts dc supervirosy and dial pulse signals to 2600 cps tone signals for transmission over a carrier system and received tone pulses into dc signals. A resistive hybrid network is included in the set for two-wire operation. External transformer hybrid modules are available, if desired.

The units use solid-state components, etched-wiring, and are constructed on plug-in cards which mount in rack-mounted card cages. Cards are 1⅜ inches x 8¾ inches x 8 inches, with connections made through contacts on a 22-terminal printed board connector at the rear of the card. Twelve sets can be installed in a card cage on a standard 19-inch rack. One each mercury-wetted-contact and reed-type, hermetically sealed relay is used. The front panel contains controls and bridging pin jacks. The set may be conveniently tested in operation through the use of a module extender and template which indicates the proper test points and normal voltages.

In operation, dc pulses from the M (transmit) lead operate the signaling tone keyer which pulses the 2,600 cps signal from the signaling oscillator. The dc pulses also cause the signal level control circuit to increase the level of the dial and supervisory signal

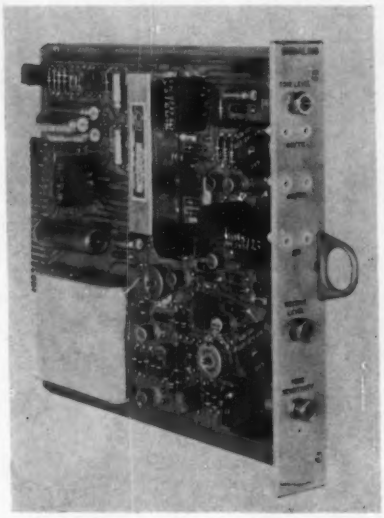

Fig. 20 Duplex single frequency signaling unit

by 12 db to improve the signaling margin. A transmit line cut-off circuit short circuits any noise which may be present at the input side of the circuit. A limiter is provided to suppress transients originating in the switching equipment.

The receive portion of the set includes a voice-receive amplifier, notch filter, and a signaling detector circuit. The receive notch filter presents a high impedance to the 2,600 cps tone to prevent interference with voice transmission under on-hook conditions. The signaling detector circuit includes an amplifier limiter, a signaling detector and discriminator, a slow pulsing circuit to increase delay under off-hook conditions, a guard disable function, and a dc amplifier and pulse correction circuit.

The pulse correction circuits correct pulse length distortion and operate a relay which repeats signals to the E lead of the connecting equipment. The keyer relay provides E, F and N leads. Transmit level from a two-wire line is 0 dmb, two-wire receive level is nominally —4 dbm with resistance hybrid. Four-wire transmit level is —13 or —16 dmb adjustable. Four-wire receive level is 7 dbm or 4 dbm. Impedance is 600 ohms balanced. Signaling tone level is 20 db below test tone at 2,600 cps. Frequency response is 200 to 4,000 cps +0.5 db. Power requirements on-hook are 70 milliamperes, 21.5 volts dc, regulated; off hook power requirements are 150 milliamperes, 21.5 volts dc regulated.

•

TRANSMITTER-RECEIVER (Fig. 21). This transmitter-receiver, a product of Erco Radio Laboratories, Inc., is a self-contained station for point-to-point application. Basically, the transmitter-receiver unit consists of a 40 to 50-watt telephone transmitter and fixed frequency receiver all self-contained in one cabinet completely prewired as a packaged station.

The transmitter section is capable of operation on any one of two pretuned frequencies with instantaneous selection of the desired channel by means of a front panel switch. The receiver section is also capable of operation on any one of two pretuned frequencies with channel selection by means of a separate front panel switch. It incorporates two completely independent RF mixer and crystal oscillator stages each of which uses plug-in coils and a crystal.

Transmitter carrier ON-OFF and receiver standby functions and antenna changeover are controlled by a front panel press-to-talk switch. Modified single P1 section antenna network will couple the transmitter output to most single wire antenna systems. Frequency range is 2 to 16 mc with plug-in

Fig. 21 Transmitter-receiver

inductors available for receiver to cover any 1.75 to 1 frequency range. Intermediate frequency of receiver —460 kc. Power source 110/115 volts 50/60 cycle single phase AC. Suggested uses are for maintaining communications contact with bases, field survey and exploration teams, advance stations, aircraft and other vital arteries.

•

TOLL RESTRICTOR (Fig. 22). The Stromberg-Carlson Toll Restrictor is a device to prevent unauthorized personnel from accessing the Direct Distance Dialing (DDD) network, metered-zone service areas, or restricted local codes from a PBX central office trunk. This device prevents misuse of toll and local circuits by those not authorized to make such calls.

The Toll Restrictor distinguishes be-

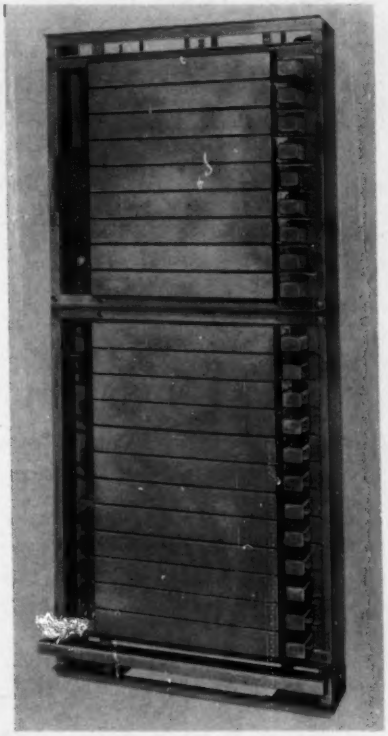

Fig. 22 Toll restrictor

tween calls from completely unrestricted telephones (marked on a per-line basis) and calls from restricted lines. When digits are dialed from a telephone not having unrestricted privileges, the user will receive a busy tone, a recorded announcement, or operator intercept, as specified for the installation.

The Restrictor is mounted in a single bay 7 feet high, 3 feet wide and 1 foot-6 inches deep. The wired capacity is for 50 trunk adapters, five register circuits and finders, one common circuit, and one non-restricted line marking circuit. It is stocked in both two-register and three-register systems, with additional capacity provided on order or at a later date.

•

ELECTRONIC TONE GENERATOR (Fig. 23). The Automatic Electric Type TG-1 tone generators are dc-to-ac converters utilizing transistors to provide standard central-office tones-dial and busy tone (600 cycles modulated by 120 cycles), reverting tone

(Continued on page 62)

THIS IS THE NEW

it looks better! it works better! it sells better!

Improved Design. Looks like a speakerphone—not like a desk phone with an attachment. Handsomely different in appearance. It adds style and prestige to any office—and gives you a sure-fire selling point. In beige, grey, green, white, turquoise and black.

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Installs just like a regular phone. No separate control equipment. No special power supply. Contact your AE representative for further details or write: Automatic Electric Sales Corporation, Northlake, Illinois. In Canada, Automatic Electric Sales (Canada) Ltd., 185 Bartley Drive, Toronto 16, Ontario.

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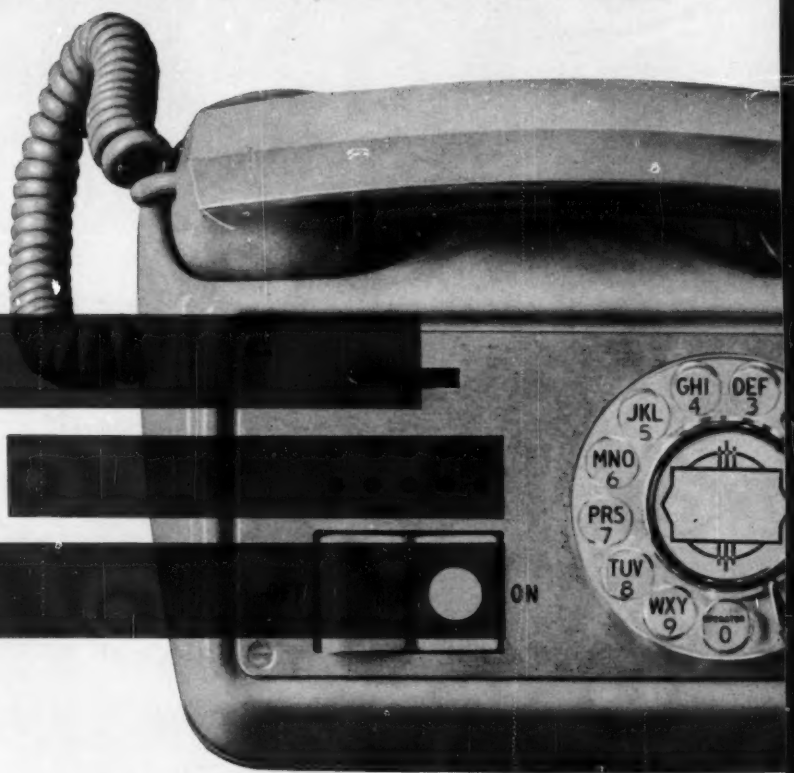
SPEAKERPHONE /*Executive Model*

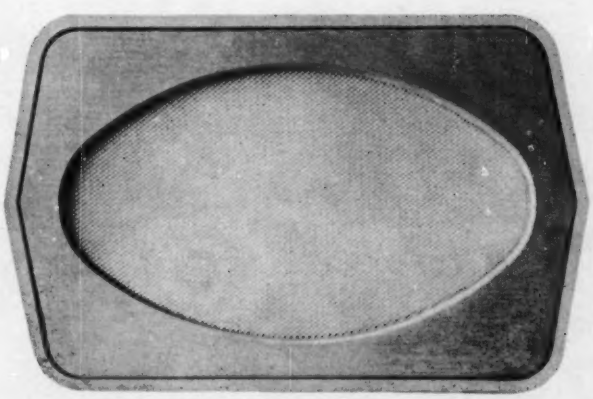


Volume Control wheel is handy for conference calls. Sound is easily boosted so that others in the room can hear.

Built-in microphone picks up normal voice from across the room and from any direction. Automatically muted when speaker is operating to minimize feedback.

On-off switch: Just presses switch to turn on microphone and speaker. Signal light beneath "on" position.

New, large speaker brings in voice clearly, just as if caller were in the room. Transmits pleasing tone signal.



Directors of the Illinois Telephone Association. Seated, from left to right, first row: W. F. Brissenden of Springfield; Arthur P. Murray of Sycamore; Roland Schmidt of St. Jacob; Donald F. Anderson, president, of Geneseo; L. N. Ewers of Morrison; Walter G. Wright of Bloomington; and John F. Tharp, executive secretary. Second row, from left to right: F. S. Coakley of Dixon; Russell Logue of Casey; Robert P. Reuss of Springfield; O. M. Westrup, vice president, of Mattoon; K. L. Schroeder of Freeport; Ray J. Alter, treasurer, of Galesburg; Ben B. Boynton, general counsel, of Springfield, and R. W. Britt of Bloomington. Those directors not present for the picture are: Morris A. Kugler of Okawville; and Martin M. Wandrey of Des Plaines.

Illinoisans Gear up For:

SPACE AGE COMMUNICATIONS

By HELEN HARDIN

THE BUSINESS OF GEARING up telephone manpower and equipment to the demands of the space age occupied sessions of the 57th convention of the Illinois Telephone Association, meeting May 23, 24, and 25, in Springfield at the Abraham Lincoln Hotel.

Presiding over the convention was Donald F. Anderson of Geneseo, then vice president of the Illinois association, elected on the final day of the convention as the new president for 1962-63.

Apropos of stimulating progress, John F. Tharp, executive secretary, announced that the association has initiated and activated two new committees, the DDD Coordination Committee, and the Public Relations and Personnel Committee, from which much is expected to be heard in the future.

Mr. Tharp reported that the accounting committee took up the problem of proposed legislation for a 3½ per cent tax on rental and leasing of personal property—to clarify the industry's liability—and it was concluded that such a tax would not affect typical leasing and rental agreements entered into by telephone companies.

In cooperation with the Illinois Commerce Commission, the accounting committee also worked on needed changes in the Uniform System of Accounts for A and B companies, Tharp said.

The DDD Coordination Committee prepared a booklet on the subject of "DDD Coordination" and the association's Plant Committee succeeded in securing a commission order setting forth rules "Relating to the Protection of Underground Public Utility Facilities".

The Illinois association's Public Relations and Personnel Committee gave members valuable guidance on the newly enacted Fair Employment Practices Act, which affected telephone companies of 100 or more employes.

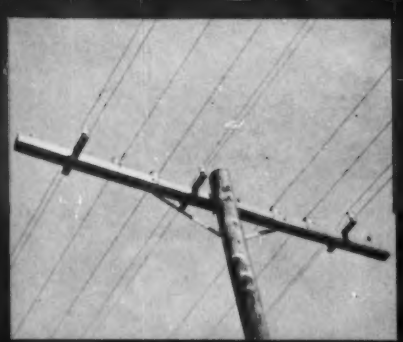
Another valuable help supplied to the Illinois industry, Tharp revealed, is a booklet of sample press releases covering many situations calling for a company to give a statement to the public.

Also, a year-old publication produced by the Traffic Committee, "Engineering Economy in Dial Office Management", evoked such a response

HUBBARD

"ARM to ANCHOR"

HARDWARE FOR TELEPHONE LINE CONSTRUCTION



PINS • CROSSARM BOLTS • BRACES • POLE SEATS
CLEVISES • BOLT EYES • D. A. BOLTS • EYE BOLTS
SPRING WASHERS • ALLEY ARM BRACES • LAGS
TRANSPOSITION BRACKETS • TANDEM BRACKETS
CABLE CLAMPS • CABLE RINGS • WALL STRAPS
POLE BALCONIES • LINKS • STRAND CONNECTORS
LASHING CLAMPS • EXTENSION ARMS • STRAPS
CABLE GROUNDS • GUARD ARM HOOKS • SHIMS
GRADE CLAMPS • SPAN CLAMPS • "L" BRACKETS
POLE GUARDS • STRAIN PLATES • ADAPTERS
GUY HOOKS • LOAD PLATES • HUBEYE BOLTS
HUBEYE RODS • SCREW ANCHORS • ROCK BOLTS
EYE NUTS • STUBBING BANDS • GUY CLAMPS
SERVISLEEVS • POLE GROUNDERS • GUY GUARDS
POLE MARKERS • POLE STEPS • WIREHOLDERS
WASHERS • KNOB SCREWS • DRIVE HOOKS
TREE HOOKS • PINCH BRACKETS • POLE GAINS
NAILS • CROSSARM REINFORCING PLATES

ANCHORS • GROUND RODS • CABLE RACKS
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LOCK CLIPS • DUCT SHIELDS • DOWEL PINS

BETTER PRODUCTS *through Creative Engineering*

HUBBARD AND COMPANY
CHICAGO 50, ILLINOIS

Trio conferring on program matters at recent convention of Illinois Telephone Association (left to right): John F. Tharp, executive secretary; the Hon. James W. Karber, Chairman of the Illinois Commerce Commission; and Donald F. Anderson, reelected president.

from all 50 states, and Puerto Rico, Virgin Islands, and even India, on cost basis, that a new publication, on "Operating Economy in Standard Service objectives" has been made available.

The Illinois association has also decided to make an all-out attack next year, during the 1963 session of Congress, for elimination of the 10 per cent Federal Excise Tax on Telephone service.

During 1961-62, the association expanded its film library to a total (at convention time) of 83 films, which can aid companies in public relations activity. Teletrainers are another valuable aid which should be utilized, Mr. Tharp pointed out.

The accomplishment of these various activities has been due, among other things, to a harmonious relationship with the Illinois Commerce Commission, said the secretary, with a bow to the new ICC Chairman James W. Karber, a convention speaker.

That this is a mutually pleasant relationship Chairman Karber emphasized when he delivered his talk on "The Three C's". Mr. Karber regards the entities making up the three C's—the Company, the Customer, and the Commission—as sharing a hypothetical partnership.

"If the Customer has a utility problem, so have the Company and the Commission," he pointed out. "I can think of no serious matter involving public utility rates or service where the interests of three parties aren't affected by the ultimate decision."

He continued: "Today when the companies are progressing so rapidly, both economically and technologically; when the Customer's interest in material gain is greater and his curiosity in social, economic and technical matters is keener; when the citizenry *wants answers, not excuses* and when the Commission must understand and fully consider the desires, the demands and the requests of both the Company and the Customer, greater skill, knowledge and integrity are required by all parties." . . .

If, said Karber, all of the people, most of whom are in contact with the day-to-day operations of the public utility, are sold on the operations of the Company, they will pass the good word on to their friends and customers, and satisfactory public relations will result therefrom.

"Today, when the companies are larger and the employes have less contact with the customers, the public relations problem becomes more difficult. It appears that the bigger a company becomes, the greater the effort it must make to remain a vital part of the community it serves. The old friendships in the community must be retained. While publicity, advertising and participation in public affairs are all effective in achieving favorable public relations, the personal contacts of shareholders, officers and employes with the customers accomplish even more in building confidence in the company," stated the ICC Chairman.

"Why are good public relations so important?" asked Karber. "In my opinion, public relations have such a great impact on rates that a public utility can never afford to relax for a moment in stressing their importance. *It is impossible to store up so much good will that you can't find some rough period when it will be very useful.* Such a period is usually a contested rate case. It is never a simple matter to get a rate increase, and the more opposition a company has, the more difficult the problem becomes, and I am convinced that the better the public relations of a company before the rate case begins, the less opposition that will be encountered during the hearings."

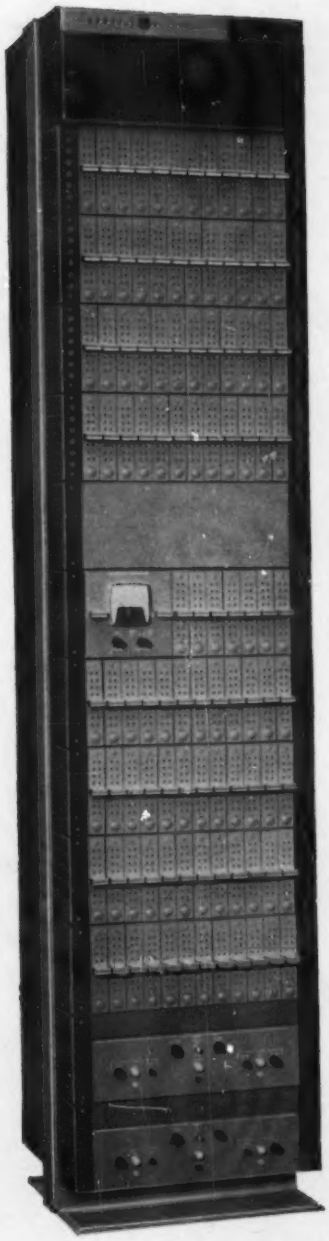
"I am inclined," Karber continued, "to believe that publicity releases made (in a simple way) will also be more readily accepted by the public. Instead of briefing the public on the fact that thousands or millions of dollars in additional revenues are needed by the company to meet increased labor and material costs, a statement that labor and material costs have increased so much a station per month, and that it will therefore be necessary to increase the rate per station 30 or 40 cents per month which is more effective from the customer's stand-

(Continued on page 42)

Frank Crowe, Assistant Commissioner of Illinois Commerce Commission, discussing "Accounting Aspects of Rate Case Preparation" during session of Accounting Panel at the Illinois telephone convention. Other panel speakers were (left) R. W. Britt, vice president of General Telephone Co. of Illinois; and J. J. Rider, general accounting manager of Illinois Consolidated Telephone Co.; and (right) H. M. Waller, comptroller of Northwestern Telephone Co.; and Perry D. Woodward, president of Northern Illinois Telephone Co.

TELECOMMUNICATIONS

General Electric Transistorized Microwave and Carrier Systems gain wide acceptance

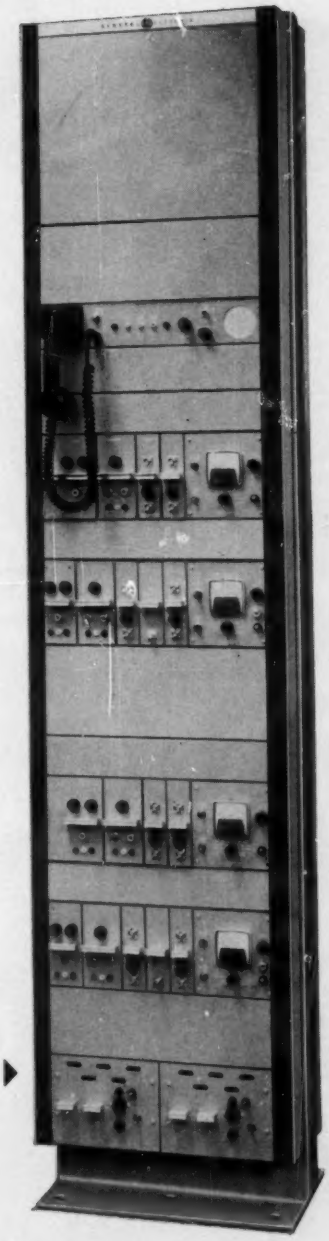


Among those companies that have already selected G-E telecommunications equipment are Western Union, New York Telephone Company, Florida Telephone Corp., Parker Valley Telephone Company, Highland Telephone Cooperative and United Telephone Company of the West.

Also, check into the new General Electric TDS-90 high-speed data transmission system.

◀ TCS-600 Carrier Multiplex System

TRS-660 Microwave Radio Equipment ▶



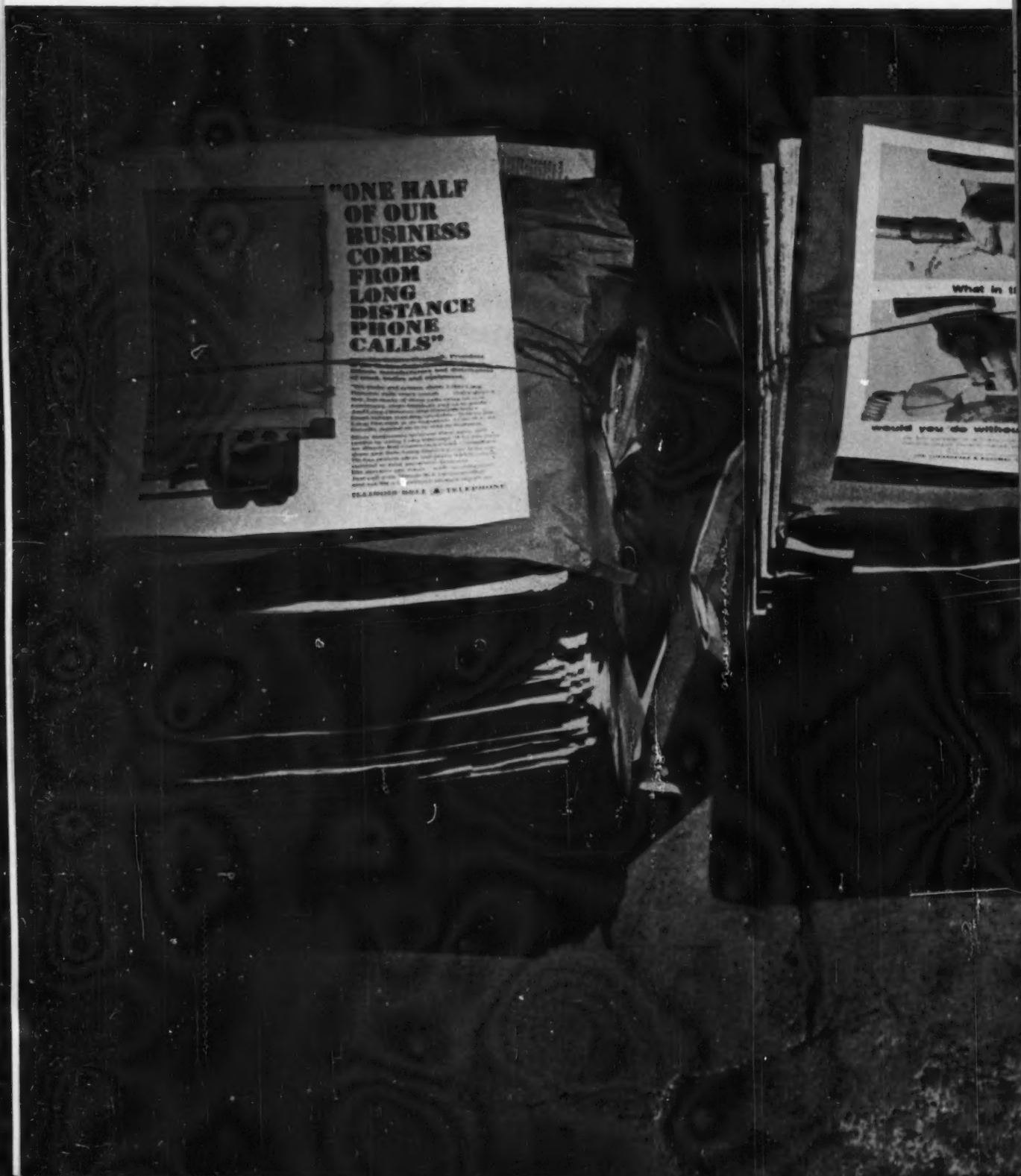
For complete information on General Electric transistorized telecommunications systems, call W. E. Evans, Area Code 703, 846-7311, or write Section 3561-30, Communication Products Department, General Electric Company, Mountain View Road, Lynchburg, Virginia.

GENERAL ELECTRIC

Every voice counts...

A lot of advertising is done by the telephone industry, some of it national, some of it local. You do it. Your nearby Bell Telephone Company does it. But wherever it originates, the result is the same: all customers gain a fuller understanding of the telephone industry, its services and its people.

The three advertisements below are typical of local efforts by Bell Telephone Companies. Some of your subscribers may have seen them in Illinois, District of Columbia, or West Virginia newspapers. If so,



perhaps the messages helped your own company build Long Distance usage, increase appreciation for telephone service, or sell extension phones.

Other Bell Telephone Companies run similar messages all across the U. S., seen by both their subscribers and yours. Such advertising joins with your own to keep the industry story before the nation—a joint informative venture shared by Bell System and Independent Companies.

Bell Telephone System

Ben Smith, general merchandising manager of Southwestern Bell Telephone Co., St. Louis, addressed the convention of the Illinois association on the subject "Profitable Selling".

point. Smaller figures and amounts appear to be more understandable and less frightening to the public."

He added, it is also expected, that the other "C", the Customer, be fair, just and reasonable in requests and demands in all matters relating to rates and service.

As for the Commission, it must find a fair rate of return on the fair value of property used and useful in rendering service to the public, and at the same time, not allow a rate that is in excess of the value of the service to the Customer.

The determination of fair value, the Chairman explained, represents "one of the major imponderables in public utility regulation—but it means today in law just what it meant in 1898 when Smyth vs. Ames was decided in the United States Supreme Court—it is the value which, under all the facts and circumstances surrounding the particular case, is fair both to the utility and the public.

Admittedly, he said, this statement of legal principle sounds very plausible, but is sometimes difficult to apply. "The Commission must keep in mind the service that is being rendered and the value of that service to the customers," Karber asserted.

Thus, if this hypothetical partnership (the three C's) operates in a fair, just and reasonable manner, the ICC Chairman concluded, "there should be no aroused public opinion to contend with."

From the speech of the new ICC Chairman, the Illinois telephone convention moved to the panels on its program.

The session on Accounting, headed by moderator H. M. Waller of Northwestern Telephone Co., covered the topics of "Case Preparation", "Revenue Requirements", "Depreciation and Obsolescence", and "Changes in the Uniform System of Accounts", with James Grooms of the Illinois Commerce Commission, R. W. Britt of General Telephone Co. of Illinois, Perry D. Woodward of Northern Illinois Telephone Co., and J. J. Rider of Illinois Consolidated Telephone Co. respectively, participating.

The Commercial panel was moderated by H. F. Moran of General Telephone Co. of Illinois. E. E. Cole of that company spoke on "Business Office: Profit or Loss"; and Walter R. Anderson of the Danville office of Illinois Bell Telephone Co. spoke on "Customer Credit".

"Operators Corner", under the leadership of Dora L. Mulligan, general traffic supervisor of General Telephone Co. of Illinois, held a discussion of "Technological Changes and Their Effect on Operating Practices".

The Plant and Traffic Panel was composed of Don R. Bradley of Intra State Telephone Co. as moderator; P. M. Springer of Illinois Bell, speaking on "Direct Buried Cable"; C. L. Cox of General of Illinois, on "Right of Way"; A. A. Wilson of Illinois Consolidated Telephone Co., on "Joint Pole Agreements"; and J. J Neiderman of Middle States Telephone Co., on "Administration of Central Office Facilities".

From the ideal relationship of the Company, the Customer, and the Commission, Illinois conventionites turned their attention to the demands of the space ventures in communications, as presented to them by H. J. Wanner, public relations assistant of Illinois Bell Telephone Co.

In the introduction of his address on "Communications in the Space Age", Mr. Wanner said:

"It required the first million years of his existence for man to learn the use of stones as tools. Fifty thousand years ago, he learned to build and use a fire, but for the next forty thousand years he was still merely a hunter, a gatherer, yes, just a scavenger. A hundred years ago, 95 per cent of our productive labor was performed by man and animal power; 5 per cent by machines.

"Now the percentages are reversed. Technological advances derived in the past 50 or 60 years exceed in amount all that man has accomplished in the way of 'progress' since the time of Christ. We are leaving the machine age—for the space age."

Mr. Wanner set forth the following reasons why the development of working communications by a satellite system are essential:

Whereas population growth was steady, and the use of the telephone for overseas calls increased steadily during the twenties and until the end of World War II, like the population, telephone calls increased tremendously after the war. Whereas in 1950, a million overseas messages were handled, he reported, in 1955, the number grew to 2 million; and in 1961, to over 4 million. The estimated 1980 figure is somewhere around 100 million messages.

With a satellite system, Mr. Wanner indicated it will be possible to make live TV and data transmission available for overseas points.

Our military and defense activities make it necessary to have both a sound and a flexible communications system, he said.

"Last, but not least," he said, "for the obvious political reasons, being able to communicate with the underdeveloped and remote areas of the world in order to maintain our posi-

(Continued on page 60)

Banquet table companions at Illinois telephone convention from left to right: Mrs. C. P. Becker; C. P. Becker; J. A. Negro; Ancil LaFevers; Joyce E. Cooper; Charles Marshall; and Mrs. R. R. Floch.

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are especially pleased when they are called in at the earliest stages of a project—whether it be a country-wide telecommunications scheme, a complete sound or television network, or an exchange cable distribution scheme. Their advice will enable your requirements to be carried out speedily, efficiently, and at minimum cost without unnecessary interference to your existing system. TCL are specialists in the manufacture and installation of telephone cables and in the design of cable networks. In conjunction with their associated companies, TCL are able to design, manufacture and install a complete system for telecommunication projects anywhere in the world.

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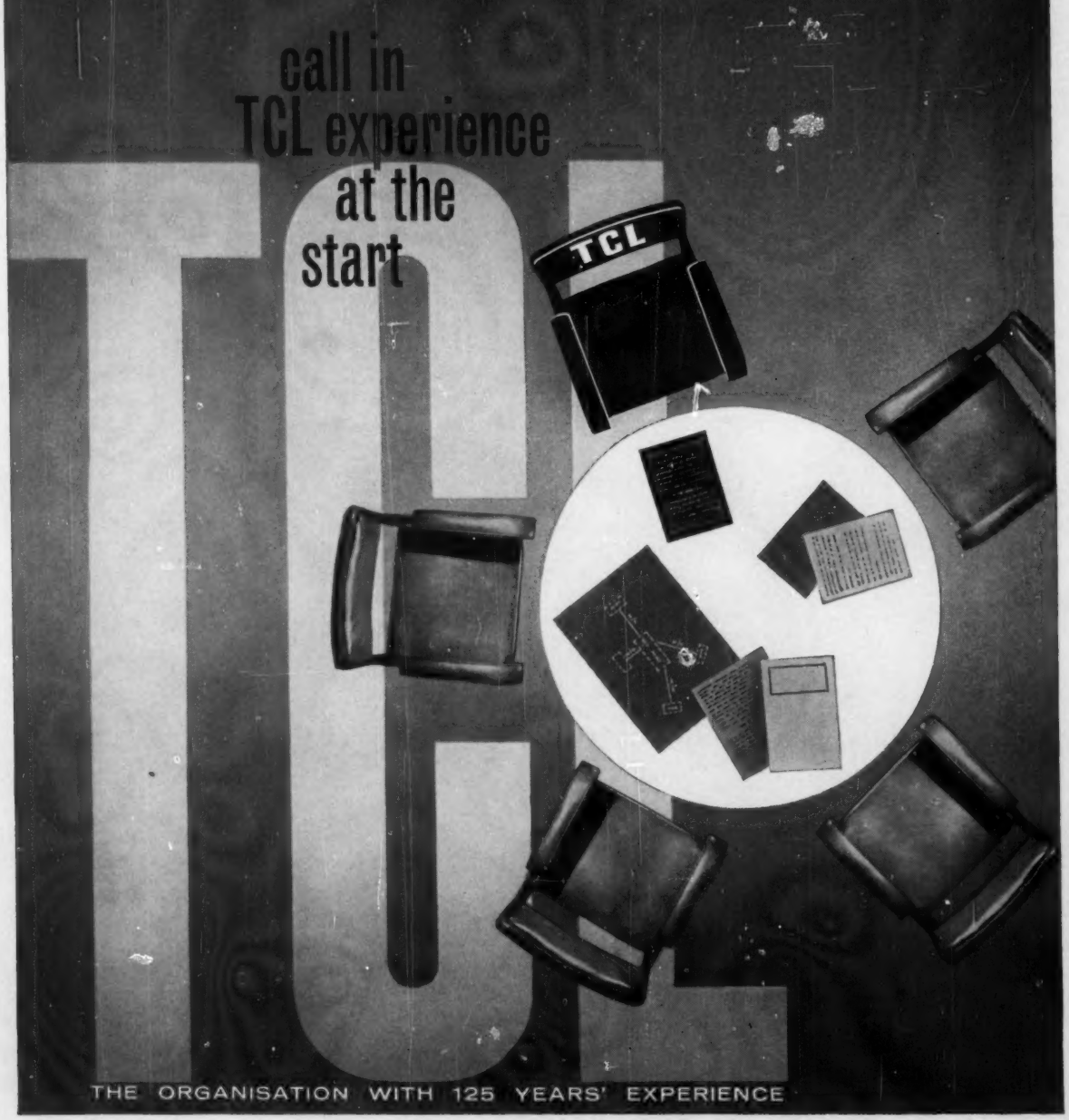
call in TCL experience at the start



THE ORGANISATION WITH 125 YEARS' EXPERIENCE

DEPRECIATION—UNSOLVED PROBLEMS

(Continued from page 19)

to produce a set of composite life tables, one for each vintage, but with all kinds of plant combined by vintages. By a simple summation process a depreciation rate can be determined for each vintage, and finally a single composite rate for the entire plant in service.

This composite rate is applied to the plant-in-service balance during the current year. Theoretically, a new composite rate should be developed each year, but, unless additions or retirements of plant change sharply in magnitude, it will be found that the rate is so stable that revisions don't need to be made every year.

Now, so far as the current accounting is concerned, this does not differ from the usual process of depreciation accounting. But a very interesting possibilit · suggests itself. Why is it necessary to review each plant vintage every two or three years and then develop a new rate for it? Why not set up a schedule of rates for a vintage the year after the plant has been installed, and calculate these as *amortization* rates instead of *depreciation* rates? The amortization rates would be so calculated that they would be applied to the *initial* investment in the vintage. That is, a rate would be calculated that would be applicable in the first year to 100% of the investment in the vintage; another rate would be calculated that would be applicable during the second year to the *same 100%* of the initial investment; etc. The schedule would be frozen at the start and adhered to until the entire 100% of the initial investment had been amortized. This is true amortization; yet, if the ELG technique is used, it is entirely in tune with the straight-line principle —i.e., the investment is repaid year-by-year "as evenly as may be" over the life of the plant.

It differs from *depreciation* accounting in three respects:

(1) The amortization rates are applied to total initial investment in a vintage, while depreciation rates are applied to the surviving balance.

(2) The amortization schedule is unchanged until the entire investment has been liquidated, while depreciation schedules must be changed frequently.

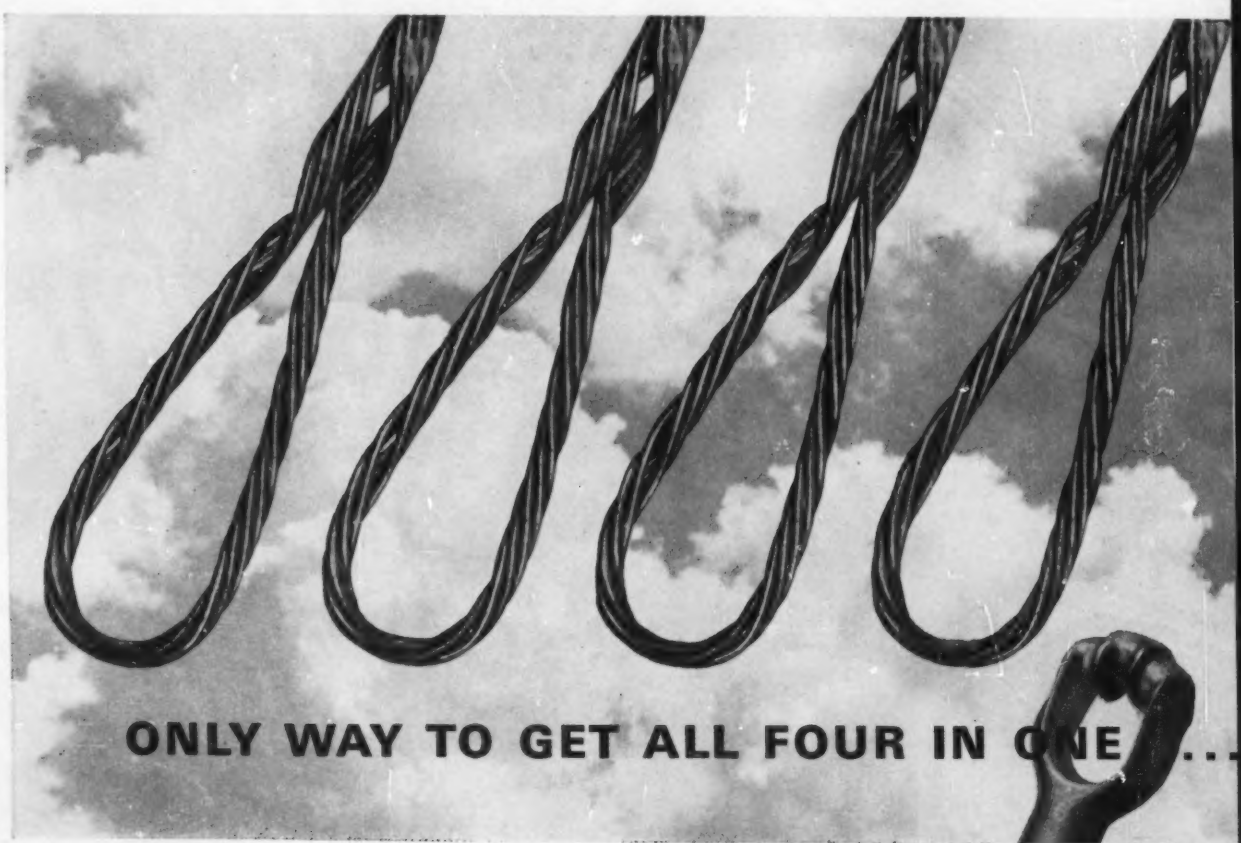
(3) The amoritzation method automatically amortizes precisely the initial investment, while no depreciation method has such an automatic feature—a cause of much debate between company and government engineers.

Despite the difference in theory between amortization and depreciation accounting, if the equal-life group plan is used, and if thorough and competent study methods are followed, it will be found that the study work and the capital repayment expense year by year will be practically the same under the two methods.

Inflation

Now we come to the really serious problem—inflation. We may not yet be aware of all the ramifications of inflation, but I think it is not exaggeration to say that it has brought us to a crisis in corporate accounting, in taxation and in utility rate regulation.

The basic problem is one of accounting. And, strangely enough, the core of the problem lies in the corporate balance sheet. Practically all the puzzling difficulties with capital repayment, income taxes, and rate regulation arise from this. And what is "this?" It is the traditional use of the "dollar" for two entirely diffe ent pur-



poses: as a medium of exchange, and as a universal unit of measure for all economic activity in this country. The use of the "dollar" as a unit of measure is known as the "monetary concept."

In the last 15 years or so a great deal of attention has been directed to the uncertainties that arise out of this concept in a period of chronic inflation with no end in sight. Government agencies and statisticians generally have found that time series, involving economic activities, are very difficult to interpret unless correction factors are employed to convert dollars of different times to a common value. An example is the restatement of GNP into constant dollars. When economic time series are adjusted in this manner, they are in accordance with the "purchasing power concept."

Now a balance sheet is nothing but a telescoped economic time series. The plant balance, in a long-established company, is the net of millions of dollar transactions, usually covering every year back to the time when the oldest surviving unit of plant was acquired. The purchasing power of the dollar has hardly been the same in any two years, and since 1939 it has fallen with scarcely a pause until now it has lost about 55% of its 1939 purchasing power. Certainly any unadjusted time series containing items from all these years, when telescoped into one figure as in a balance sheet, is difficult to evaluate, and certainly it is impossible to draw useful comparisons with any other company's balance sheet similarly unadjusted.

Finally, since such an unadjusted balance sheet is the basis for a very important operating expense item—now called depreciation—the income statement is also difficult to interpret. The fact is that, in a company with much plant of many ages, the purchasing power invested, i.e., the real investment, is much greater (measured in today's dollars) than shown on the balance sheet, and the expense statement falls correspondingly short of showing the real cost of repaying that purchasing power which has been allocated to the current year. Thus in a long-drawn-out inflation, such as this one, the rate of return indicated by the "monetary concept" statements substantially exceeds the real rate of return, in accordance with the purchasing power concept.

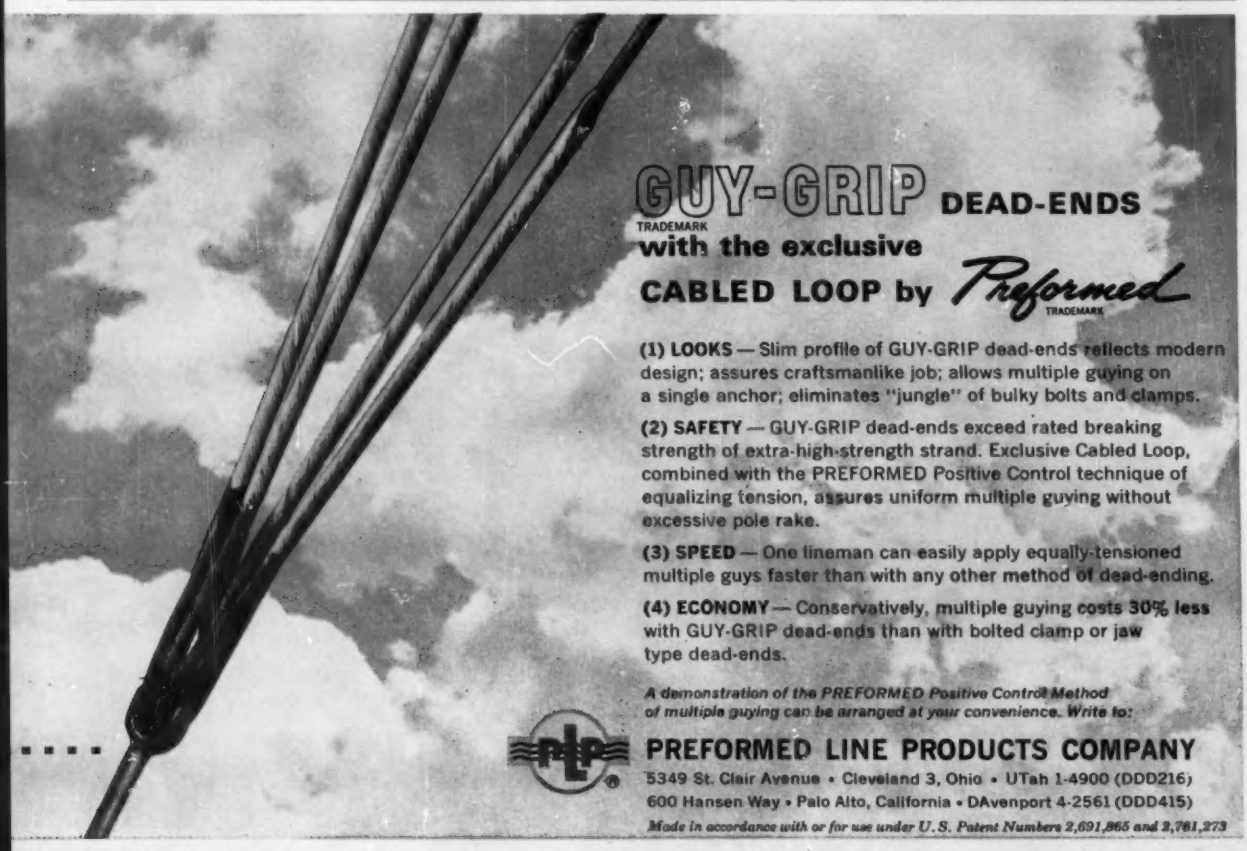
Purchasing Power Concept

The purchasing power concept is simple to apply. The basic job is to break down the gross and net book costs of plant by years of acquisition. Then each item in this breakdown is restated into dollars of today, using a recognized purchasing power index series.

A satisfactory series is the Consumers' Price Index. While this is not ideal, since it has not been developed for this purpose, it is probably the best available index of general purchasing power, and, as a practical matter, the end result would not be greatly different if any one of a number of other indexes were used. Its use would so greatly improve corporate accounting that its shortcomings would be trifling in comparison with that improvement. Naturally, if it is adopted for this purpose, economists and statisticians, in and out of government, will be stimulated to work for its improvement. This would be all to the good; but first things should come first: a change in thinking along these lines must come first.

It should be apparent that, if the plant accounts are set up on the purchasing power basis, the accumulated reserve balance will be similarly treated; and the equity capital will be increased to balance. Annual accruals for capital repayment will automati-

(Continued on page 48)


GUY-GRIP TRADEMARK DEAD-ENDS
with the exclusive
CABLED LOOP by Preformed TRADEMARK
(1) LOOKS — Slim profile of GUY-GRIP dead-ends reflects modern design; assures craftsmanlike job; allows multiple guying on a single anchor; eliminates "jungle" of bulky bolts and clamps.
(2) SAFETY — GUY-GRIP dead-ends exceed rated breaking strength of extra-high-strength strand. Exclusive Cabled Loop, combined with the PREFORMED Positive Control technique of equalizing tension, assures uniform multiple guying without excessive pole rake.
(3) SPEED — One lineman can easily apply equally-tensioned multiple guys faster than with any other method of dead-ending.
(4) ECONOMY — Conservatively, multiple guying costs 30% less with GUY-GRIP dead-ends than with bolted clamp or jaw type dead-ends.
A demonstration of the PREFORMED Positive Control Method of multiple guying can be arranged at your convenience. Write to:
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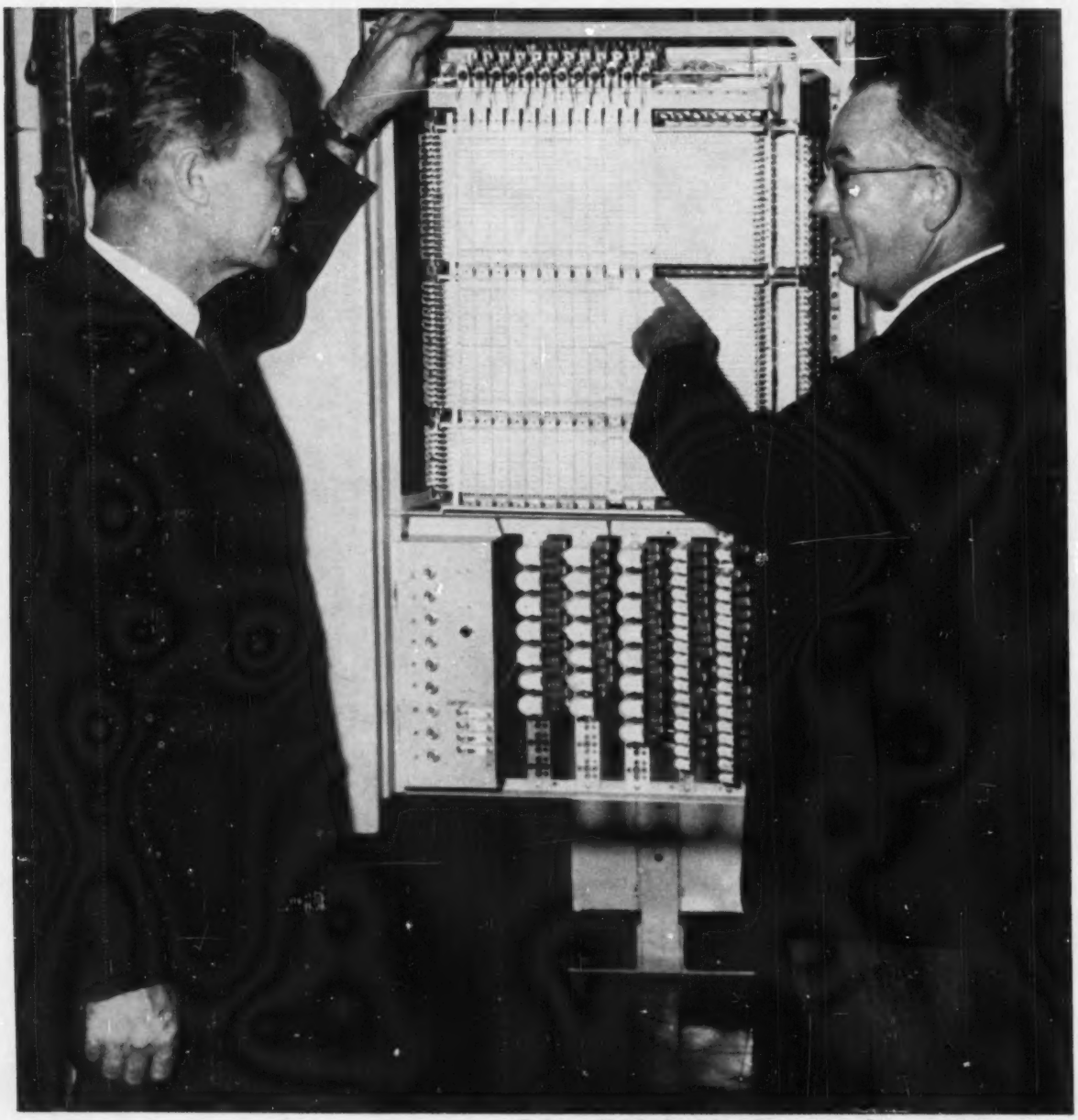
"WE SAVED



Exchange Unit for Leich Line Concentrator. Shown are (left to right) J. H. Shultz, General Manager and Arthur F. Brubaker, Plant Superintendent, Rochester (Ind.) Telephone Co., Inc.

$12,000 WITH THE LEICH LINE CONCENTRATOR"

REPORTS MR. ARTHUR F. BRUBAKER, PLANT SUPERINTENDENT
ROCHESTER TELEPHONE COMPANY, INC., ROCHESTER, INDIANA

"By installing the Leich Line Concentrator instead of cable, we saved $12,000!" reports Mr. Arthur F. Brubaker. "We were able to add lines for new subscribers and reduce the number of subscribers per line at a cost much lower than cable relief."

The cost-cutting story: Mr. Brubaker needed more circuits in an area northeast of Rochester, Indiana. Since 24 pair of the existing 26 pair cable were in use, he would normally have had to add another 26 pair cable at a cost of about $17,000.

The *installed* cost of a 49-12-3AZ Leich Line Concentrator, including weatherproof cabinet for the subscriber unit, was only $5,000. Instead of serving each line over a separate wire pair, it concentrates a number of subscriber lines over a much smaller "high usage" trunk group.

It used 15 pairs (12 traffic trunks and 3 control trunks) of the existing 26 pair cable to furnish 49 lines—28 in service and 21 available for future growth. Four of the remaining original eleven pairs were used as high usage lines in the area, leaving seven spare pairs. Mr. Brubaker increased his original 26 lines to a total of 60—for a net gain of 34 lines!

You can benefit with the Leich Line Concentrator, too. To learn how, just send in the coupon.

Pole-mounted Subscriber Unit for Leich Line Concentrator.

FREE 12-page catalog of FACTS AND FIGURES

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Attn: J. M. Zidlicky, Director of Sales Promotion
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Please send me____copies of "The Leich Line Concentrator" catalog which includes typical applications, installation data, principles of operation, and ordering information.

Name_____

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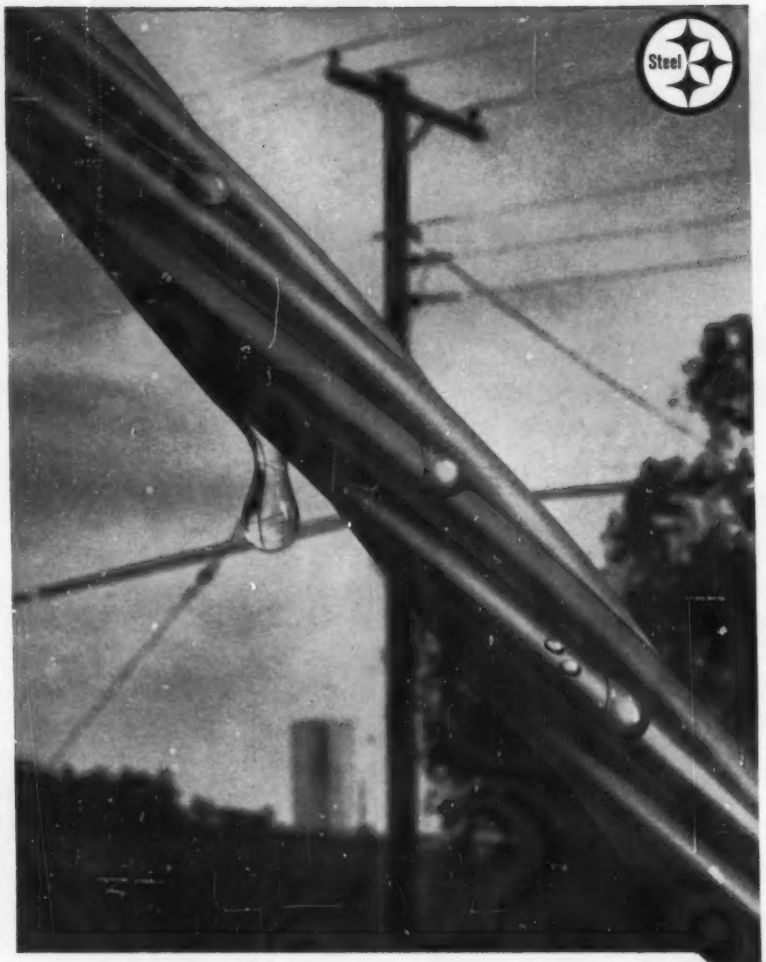

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Rain, snow, high winds, electrical storms...CF&I Galvanized Strand takes them all in stride. Safely supports the heaviest cables...harmlessly grounds lightning in overhead applications...guying poles and towers even under severest conditions.

For long life, every wire in CF&I Strand is individually hot dipped in zinc before stranding. No bare spots, no pits...but a continuous coating of water and corrosion resisting zinc.

Available in both 7 and 3 wire constructions that meet ASTM A-363 and A-122 specifications, CF&I Galvanized Strand can also be specially manufactured to meet your individual needs.

Call your local CF&I sales office or electrical distributor for complete details and fast delivery. The Colorado Fuel and Iron Corporation, Denver, Oakland, New York. Sales offices in key cities.

CF&I STEEL

D-123

cally reflect the current purchasing power of the dollar if the rates (already developed as suggested earlier) are applied to plant investment figures stated in current purchasing power dollars. Once the accounts are set up on the purchasing power concept the accounting will be done in the usual manner, except that once a year, say, the balance sheets will have to be corrected to recognize the change in price level since the preceding year.

This suggested accounting, it should be clear, is original cost accounting, and differs from present practice only in that original costs are measured by today's dollars instead of by a wide variety of dollars. Clearly no recognition is given, nor needs to be given, to future cost levels nor to possible costs of replacing the present plant, nor is any retroactive treatment called for. There will be charged against operations each year only the pro rata portion of the original cost, i.e., purchasing power invested in the plant. What is done is to recognize what has happened to the dollar—not what has happened, is happening or may happen to the cost of new utility plant.

The suggested approach, then, completely repudiates the idea that operating expenses should provide for replacement of plant. If new plant costs rise exactly as much as the general price level, then this method (if in use from the time of initial placement) will just provide for replacement. But this is coincidence only. It is the purpose of the expense accounts to cover real costs already incurred—not something that may or may not happen in the future. This is precisely what present day accounting would do if there were no one-way trend of the general price level.

Other Methods to Handle Inflation

Many other ways of dealing with inflation have been suggested. I don't wish to discuss them here, beyond pointing out that all that I am aware of are directed either to taxes or to rate cases. I don't know of any which integrate the three problems of taxes, rate making and accounting—and without this integration I believe we have palliatives but not a cure.

If the purchasing power concept were generally accepted (and it is realized that this would require revision of tax laws, of commission accounting systems, and of accounting procedure generally), a remarkable change in atmosphere would come about.

(1) Books of account would all be consistent so that direct comparisons could easily be interpreted.

(2) Regulated utilities, and commissions, could use the books directly

to determine expenses, rate base and rate of return. Net book cost (including plant and other assets used in operations) which would be the real original cost, as opposed to the nominal cost, would normally be a perfectly good rate base, under either a fair value or original cost concept.
(3) For tax purposes the full effect of inflation would be taken care of if the operating expenses shown on a company's books were used as deductions.
(4) The complete harmony of corporate books of account, rate case showings and income tax returns would have enormous value in the whole utility-government relationship.

Summary

(1) Depreciation, in accounting, is a word which has led us astray. Let's give it up.
(2) Salvage and cost of removal are extremely difficult to estimate years in advance. But we don't need such estimates for good accounting.
(3) The straight-line method is excellent for all purposes, including income taxes, provided that, instead of broad average lives, the varying lives of individual plant units are directly recognized.
(4) Amortization, instead of depreciation, results in automatic matching of total expense with total investment, without the travail of frequent back and forth adjustment of estimated lives.
(5) Establishing the purchasing power concept for corporate accounts, and for income taxes, will solve the depreciation and rate base problems arising from inflation.

Arrow Construction Named Parsons N.C. Distributor

Arrow Construction Equipment Co., Greensboro, N. C., has been appointed distributor for the state of North Carolina by the Parsons Co., Newton (Iowa) manufacturer of trenching equipment.

Arrow Construction Equipment will sell and service all Parsons trenching machines.

"Passing the Buck"

"The nation's younger citizens will live under the hysteria of inflation throughout the rest of their lives—if it is not checked now. They will carry the load of our rising debts, and its growing interest payments—if we go on spending beyond our income."—BARRY GOLDWATER, *Arizona Senator.*

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No. 1958-AR Replaceable Gaff Adjustable Climbers. Adjustable from 14 in. to 19 in. Matched pairs, aluminum finish, riveted top and ankle loop.
No. 1959-AR—same as climber shown above but with triangular ring at ankle.

When one company has been dominant in the serving of an industry for over 100 years, it is a pretty good indication that quality is high, service is good, price is right. Above all it is evident that this supplier has kept abreast or in advance of modern technical developments to assure the finest possible equipment for the industry.

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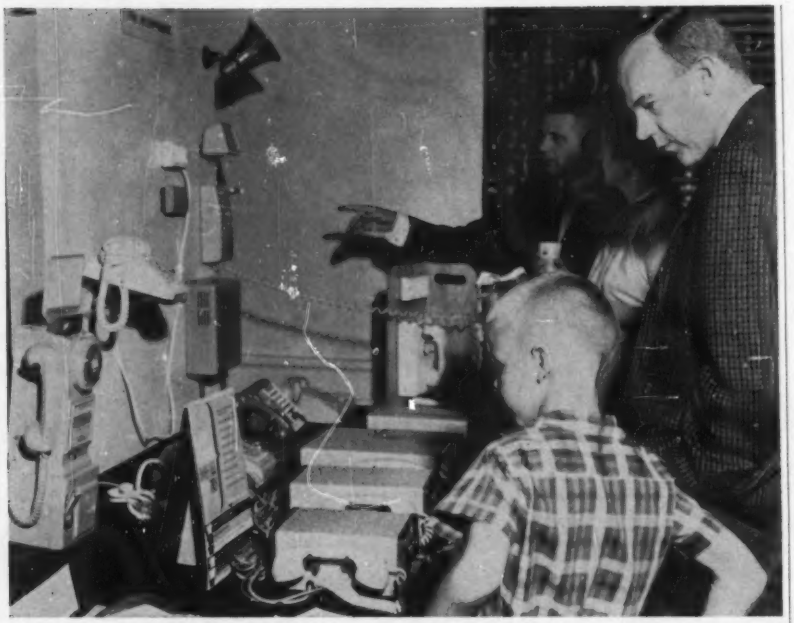

John Kennedy, auditor of Peoples Telephone Corp. and his son look at some of the automatic answering units on display, while Charles Goehring explains the operation of the Farm Interphone to Mrs. Kennedy.

Peoples Telephone Corporation Holds Employe Open House

Employes of the Peoples Telephone Corp., Butler, Pa., and members of their families recently took advantage of the opportunity to see "what's going on" at Peoples Telephone's facilities during an Employe-Family Open House.

Among the officials present was S. E. Philips, vice president and general manager of the corporation.

During the two days of the open house, about 700 persons toured the various offices and departments where employes were available to answer any questions. Signs further explaining the operations were located throughout the building.

One of the feature points in the tour was a display of the latest telephone models and systems available, including the Home and Farm Interphones. Also displayed were some of the special type telephones designed for office use, such as the Handsfree Telephone, key telephone sets, automatic answering units, and automatic dialing telephones.

The Peoples Telephone Corp. is made up of 20 exchanges serving most of Butler County and sections of six other counties in western Pennsylvania. It has 194 employes.

Unruh to United Utilities As Vice President

Telephone Utilities, Inc. and Associated Companies have announced that, effective July 1, Robert E. Unruh, formerly a member of the Oregon Public Utility Commissioner's staff, will become vice president and comptroller.

Mr. Unruh will assume the duties of G. P. Lake, who is retiring from Telephone Utilities.

ICS Electronics Catalog, Kits Now Offered

Eight new Electronics courses are among the 30 correspondence courses on electronics, radio, television and telephony, described in the new ICS Electronics catalog, International Correspondence Schools announce.

The new courses cover fundamentals, instrumentation and servos, automation, calculus and applied electronics, industrial electronics, and telephony.

Also described is a series of new Electronics Training kits, which includes associated laboratory manuals, the ICS Electronic Laboratory (specially-designed circuit board), special experiments, and a professional grade, vacuum-tube voltmeter. The new kits which are optional with all courses, are suited for either individual study, or special educational and industrial-training programs, ICS states.

To obtain a copy of the catalog, request Electronics catalog 189L from: International Correspondence Schools, Scranton 15, Pa., or ICS Canadian Ltd., 7475 Sherbrooke St. W., Montreal 28, Quebec, Canada.

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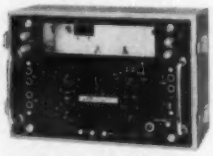

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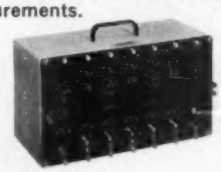
Simplifies cable acceptance tests and return loss measurements.



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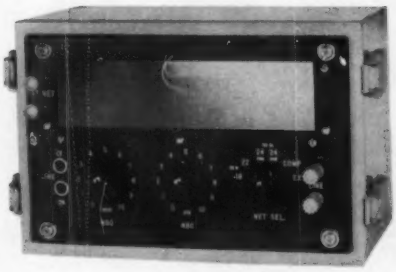

AIC FAR END TERMINATING SET

It's old-fashioned and extremely costly to use trial-and-error methods to improve far end termination over the voice frequency range.

The AIC Far End Terminating Set provides a plug-in receptacle for precision networks and a built-in capacitance decade for selecting proper build-out capacity, thus eliminating inefficient and expensive "cut-and-'try'" methods.

Airtronics International Corporation Far End Terminating Set saves up to 75% of the man-hours used in strapping for proper build-out capacitance. Now, one man can do the work of four.

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Courts and Commissions

Ind. Loan, Rate, Service Requests; Ok Sales, Rates

The Indiana Public Service Commission has held hearings on the following petitions:

On Apr. 26, on the petition of Home Telephone Co., Inc., Waldron, to borrow $55,000 and issue mortgage notes therefor.

•

On Apr. 30, on the request of Central Mutual Telephone Co., Inc., Shelburn, to borrow funds for cut over to dial service; for a new schedule of rates; to retire common stock and re-issue no-par value common stock in exchange, effecting a stock split; and to issue additional shares.

•

On Apr. 30 and May 3, the request of General Telephone Co. of Indiana, Inc., Fort Wayne, to establish EAS with Noblesville, Zionsville, Carmel, Fishers, Oaklandon, and Indianapolis in the Indianapolis Metropolitan plan service area of Indiana Bell Telephone Co.; to eliminate existing toll for these exchanges; eliminate General's Jolietville exchange and enlarge its Westfield exchange area; establish new service rates for the Westfield area; eliminate "free service" between the Jolietville exchange and the Big Springs exchange of Hendricks Telephone Corp., Roachdale.

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On May 15, the request of Indiana Bell Telephone Co. and the Mulberry Co-op Telephone Co. to establish EAS between the Buck Creek exchange of Indiana Bell and Mulberry; and to eliminate toll service between those areas.

•

On May 15, the commission also heard the petition of Northwestern Indiana Telephone Co., Inc., Hebron, to borrow $100,000; to issue mortgage notes, and mortgage assets for security; and to sell 100 shares of its common capital stock.

•

On May 29, the commission heard the request of Nappanee Telephone Co. for a new rate schedule.

•

On the same date, the commission heard the petition of Citizens Telephone Co., Decatur, for a new rate schedule.

•

The Indiana commission also has recently issued the following orders:

On May 18, it authorized the Deer Creek Co-op Telephone Co. and the Burrows Telephone Co., Inc., to sell their properties, subject to adjustments, to the Camden Telephone Co. (TELEPHONY, Apr. 28). The commission also gave the Camden company authorization to operate in the two areas; to borrow $432,000 from the REA for purchase, construction and improvement; and approved a new schedule of rates for Camden, effective June 1.

•

The commission, in an order on June 1, authorized the Monrovia Telephone Corp. to borrow $476,000 from REA; issue 220 shares of common capital stock at $100 per share; to construct its plant and facilities with the proceeds of the loan; and to render EAS between its Monrovia exchange and the Mooresville-Martinsville exchange areas of Indiana Bell Telephone Co.; and approved new rates, to be effective when improvements are completed.

•

Recently, the commission authorized the Merchants & Farmers Telephone Co., Hillsboro, to issue up to $110,000 of notes for the purpose of construction and conversion to dial service.

•

The Indiana commission on May 3, authorized the Illinois Bell Telephone Co. to issue and sell 3,771,577 additional shares of common capital stock par value $20 per share.

To Hear Neb. Sale Request

A hearing was scheduled on June 13 by the Nebraska Railway Commission on the application of Chase County Telephone Co., Champion, to sell its properties to Central Nebraska Telephone Co., Blair.

Midstate Secures Another Approval in Mo.

Midstate Telephone Co. on June 17, secured a 20-year franchise from Centertown, Mo., company officials announced.

The new telephone company, designed to establish modern dial service in a wide area surrounding Jefferson City, holds a conditional certificate from the Missouri Public Service Commission, subject to securing the necessary franchises to establish the new system (TELEPHONY, Apr. 21).

Centertown joined New Bloomfield, with franchises still needed in Eugene, Lohman and Russellville. Franchises in unincorporated Midstate areas have also been secured.

Midstate officials said they now have applications for service from a majority of the potential subscribers in five of the six dial exchanges planned, including the Centertown exchange.

In addition to the franchises required by the commission, suitable arrangements for discontinuance of service by present systems is necessary before final engineering of the exchange can be begun. Such arrangements will be necessary in Centertown, Elston, Brazito, Lohman, Russellville, Enon, Eugene, Marys Home and New Bloomfield.

It is reported the system will cost about 1 million dollars, to be financed by REA funds.

Approve Minnesota Sale

The Minnesota Railroad & Warehouse Commission has approved the sale of the Citizens Telephone Co., of Maynard to the Clara City Telephone Exchange Co. The Citizens Telephone Co. serves approximately 180 stations in Maynard.

N. C. Commission Okays General Company Financing

General Telephone Co. of the Southeast was authorized by the North Carolina State Utilities Commission June 19 to issue $6,000,000 worth of debentures which will be sold to institutional investors at not more than five per cent interest. At the same

big news in buried distribution: NEW SUPER-STRENGTH

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It's a really new concept in buried distribution! New BUPIC—double-jacketed multipair cable that's steel-reinforced to take the rigors of fast, modern plowing methods, and the hazards of direct buried service. Steel reinforcement gives BUPIC about nine times the longitudinal strength of ordinary double-jacketed cable... top-notch gopher protection as well. ■ Connections are fast and easy, thanks to full color coding. And quality transmission is assured by the design and formation of the pairs. ■ Get rugged new BUPIC in 3, 6 or 12 pairs, 19 or 22 Awg. Distributed by Automatic Electric Sales Corp., Northlake, Illinois. Alphaduct Wire & Cable Co., New Brunswick, New Jersey, 201 CHarter 9-8090.

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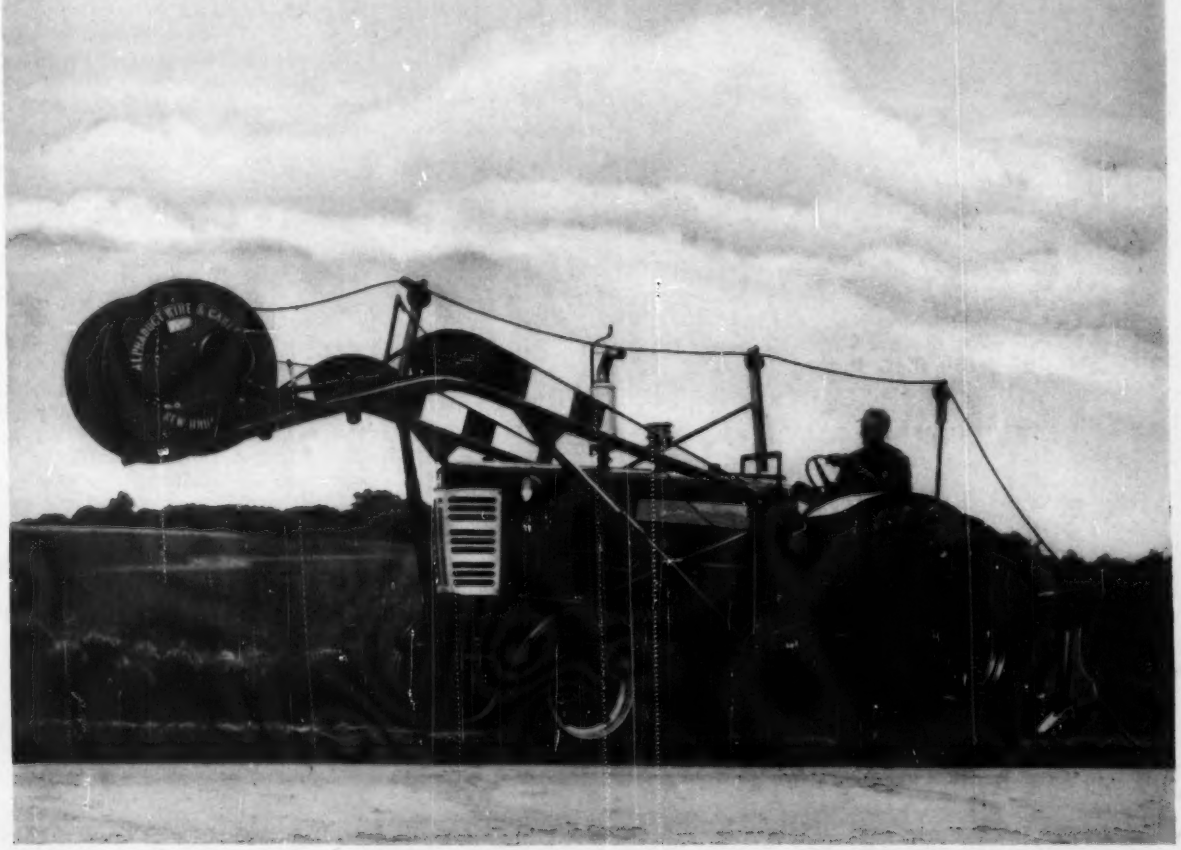

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Factory Reconditioned Instruments equivalent to New with a full Guarantee and Refund Privilege. New Black Cases, Cords, and many new-surplus parts, including Cycle Ringers now available. Shipped 10 per carton, and we pay the freight to your door on an order of 20 or more.

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time, it was authorized to sell some 70,000 shares of $10 par value common stock to its parent company, General Telephone & Electronics Corp., for $700,000.

The company will use the $6,000,000 raised by the debenture sale to repay bank loans and the $700,000 obtained from the stock sale will be used for extensions and improvements.

Two Sale Requests in Ill.

The Illinois Commerce Commission on June 16, received the following petitions: of the Pulaski Mutual Telephone Co. to sell its properties to the Fruitville Telephone Co.; and of Massac County Mutual Telephone Co. to sell to the County Telephone Co.

Obituaries

PAUL K. RHOADS, 58, southern district manager of Reliable Electric Co. died on June 13 at his home in Atlanta, Ga.

Mr. Rhoads had been in the telephone industry since 1938, when he joined Reliable Electric Co. as office salesman. Later he became a representative in the Chicago area and in 1948, was appointed manager of the southern district.

Prior to becoming associated with Reliable, Mr. Rhoads was with the Tips Tool Co. of Taylorville, Ill. and served as district sales manager of A. B. Chance Co. of Centralia, Mo.

Mr. Rhoads was born in 1904 at Taylorville.

He is survived by his widow, Verna; a daughter, Mrs. Gloria Nelson of Milwaukee, Wis., and a son, Sharon, of Taylorville.

•

A. M. "JOCK" STEINE, 45, vice president of Stampings, Inc., died in Moline (Ill.) Public Hospital June 9 after an automobile accident the previous day.

Mr. Steine joined the Stampings organization in 1949 in the sales department for bottled gas housings. With the introduction of Stampings Pow-R-Spade Trencher in 1956, he assumed the promotion and sales service duties of that department. He was elected vice president in charge of all sales and advertising in 1957.

•

ROBERT M. BRUCE, 83, retired senior vice president of Rochester Telephone Co. and a former company director, died unexpectedly June 8, 1962 in Northside Hospital. His home was at 100 Lafayette Parkway, Brighton, al-

though he had spent much of his time in Orlando, Fla. for the past three years.

Mr. Bruce was born in Auburn and joined the Bell Telephone Co. in Buffalo as an installer's helper in 1898. By the time he was 33, he had been placed in charge of New York Telephone Co.'s plant properties in the Rochester district.

In 1921, when the Rochester Telephone Co. was formed, Mr. Bruce became plant superintendent. He was named vice president in charge of plant in 1935.

Mr. Bruce retired Jan. 1, 1946, but in April of that year he was elected a director. He continued as a director until he began spending more time in his winter home in Orlando.

Surviving are two daughters, Mrs. Leon R. Travis and Mrs. Ernest Persse; two brothers, Donald and Douglas Bruce; two sisters, Mrs. Nobert Rauber and Mrs. James Clark; five grandchildren and seven great-grandchildren.

Modern Dollar

A dollar may not do as much for you as it used to, but you don't do as much for a dollar, either.—Maple Shade, N. J., *Progress.*

First Number Change In 65 Years

The C. S. Miller family in Tipton, Iowa, recently had a change in telephone number—the first in 65 years.

On May 5, the United Telephone Co. of Iowa cut the exchange to dial and the Miller family lost its long-lived number, Number 2.

According to Mr. Miller, the first exchange was built in Tipton in the Spring of 1897. The citzens were not anxious to have telephones installed, so the president of the bank said he would take the first telephone if Mr. Miller's father would take the second.

Mr. Miller's father kept No. 2 until his death in 1926, and then when Mr. Miller and his family moved into his father's home, he inherited No. 2.

He says the only difficulty ever encountered with the number was experienced by his daughter. She has lived in many sections of the country and when trying to call home, many long distance operators have questioned her to make sure the number was correct.

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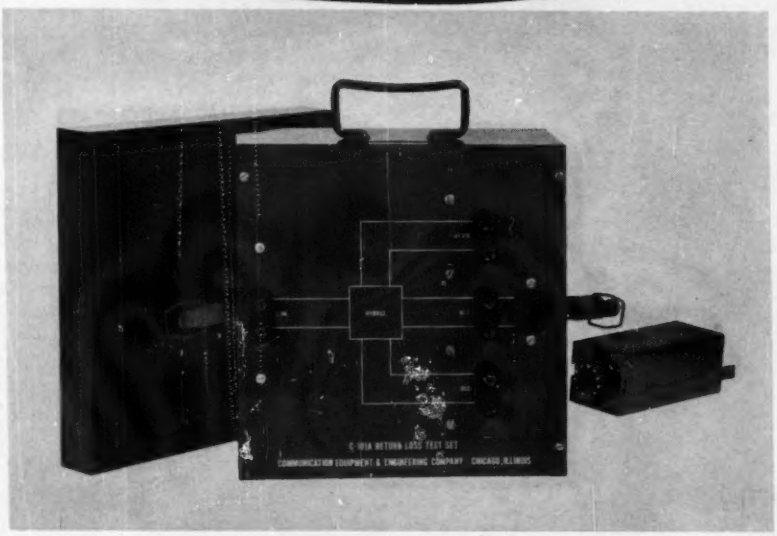
When Testing—
BE SURE!
It costs surprisingly little!



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REA Authorizes $5,330,000, Eleven Telephone Loans

ELEVEN TELEPHONE LOANS were approved by the Rural Electrification Administration, during the second week of June, as follows:

Ringgold (Ga.) Telephone Co.; $144,000; June 13. The company stated that these funds will be used to help it complete the system which has been authorized under prior REA loans.

Loans to the company will help enable it to furnish new and improved service to 2,052 subscribers. At present, the borrower is furnishing dial service to 1,498 of these subscribers. Service without toll charge will be available to the company's subscribers and the town of Chattanooga.

•

Bolivar (Mo.) Telephone Co.; $229,000; June 13. With the aid of this loan, together with $30,000 of the borrower's own funds, Bolivar will be enabled to bring initial service to 584 subscribers in the service area. A portion of this loan will be used to complete the authorized system.

REA loans to Bolivar will assist it to bring new and improved service to 3,700 subscribers. Three of the proposed four exchanges now furnish dial service to approxmately 2,050 subscribers.

•

Modern Telephone Co., Springfield, Mo.; $77,000; June 13. The company plans to use these funds to furnish initial service to 340 subscribers in the Galena and Cape Fair exchanges. Facilities required will include expanded central office equipment. Loan funds also will be used to complete the authorized system.

REA loans to the Modern Company will help enable it to bring new and improved service to 4,882 subscribers. Six of the proposed 12 exchanges are now furnishing dial service to approximately 2,000 subscribers.

•

Eastern Rowan Telephone Co., Granite Quarry, N. C.; $476,000; June 13. The company has allocated this loan to furnish initial service for 454 subscribers. There will be some service in fringe areas. Central office facilities will be expanded to serve the new subscribers.

The company also plans to use these funds to install facilities to provide a higher grade of service for existing subscribers, and to complete the authorized systems; and proposes to add $25,000 of its own general funds to this loan in order to meet all of the loan purposes.

Loans to Eastern Rowan will help make possible new and improved service to 2,680 subscribers. The borrower's one exchange at Granite Quarry-Rockwell is now furnishing dial service to approximately 2,000 subscribers.

•

Amberg Telephone & Telegraph Co., Wausaukee, Wis.; $133,000; June 13. With the aid of this loan, Amberg T&T will be able to finance initial service for 300 subscribers, install facilities to provide a higher grade of service for existing subscribers, and to complete its authorized system.

The Amberg company proposes to acquire with loan funds and its own

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North Electric Carrier costs less to engineer plant-wise!

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Continued from page 19

funds 41 miles of local service and toll line located within its service area. This line is now owned and operated by Wisconsin Telephone Co.

In order to serve the 300 new subscribers, the borrower plans to expand existing central office equipment.

Loans to this company will help make possible new and improved service to 2,024 subscribers. The six exchanges of the system are all in operation serving approximately 1,675 subscribers.

•

Sullivan (Wis.) Telephone Co.; $374,000; June 13. The company plans to use these funds to help it improve service for its 626 subscribers and furnish initial service to 152 subscribers. There will be some service in a fringe area.

This new borrower of REA funds, a commercial corporation, proposes to expand its combined dial and commercial facilities. A portion of these loan funds will be used to refinance the borrower's existing indebtedness.

Robert Auerbach is both president and manager of the Sullivan Telephone Co.

•

Brookville Telephone Co., Export, Pa.; $880,000; June 14. The company has allocated this loan, together with funds from prior loans, to be used to improve service for 1,174 subscribers and furnish initial service to 2,263 subscribers.

Brookville proposes to acquire the Rimersburg Bell Telephone Co. which now provides common battery service through the Rimersburg central office, and dial service through its Callensburg exchange.

A new dial central office is planned to replace the Rimersburg central office, and the Callensburg dial office will be retained with expanded facilities. Approximately 1,880 of the new subscribers provided for in the loan are located over the whole service area.

Loans to this borrower will help enable the company to furnish new and improved service to 10,862 subscribers. Twelve of the proposed 13 exchanges now furnish dial service to approximately 7,040 subscribers. The borrower plans to install direct distance dialing equipment in nine of its central offices.

•

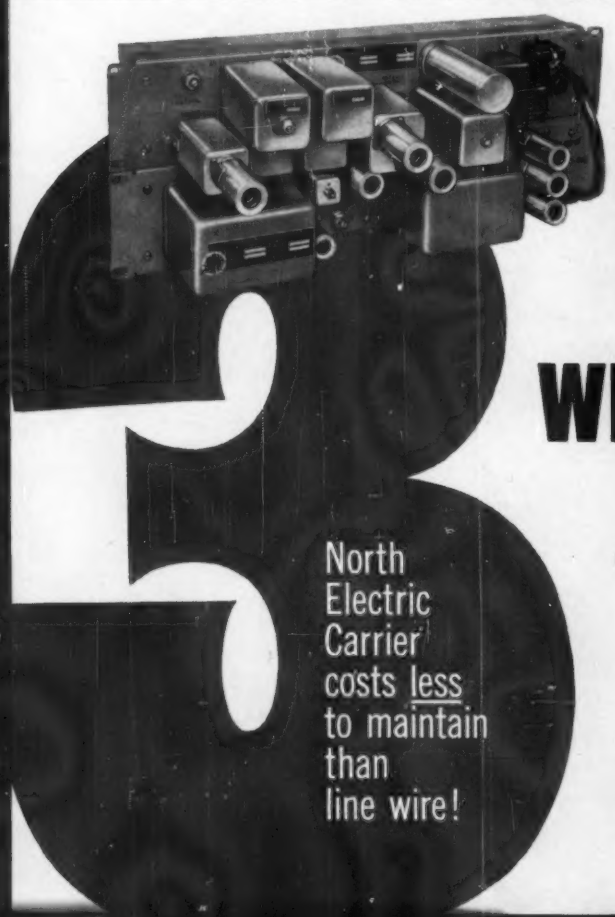
Caldwell County Telephone Co., Martindale, Tex.; $213,000; June 14. With the help of this loan, the company plans to furnish initial service for 193 subscribers and to improve service for 53 subscribers. Caldwell has recently acquired the Coupland exchange from the Southwestern States Telephone Co., and will be reimbursed for this acquisition. The Coupland exchange now furnishes dial service to 53 subscribers.

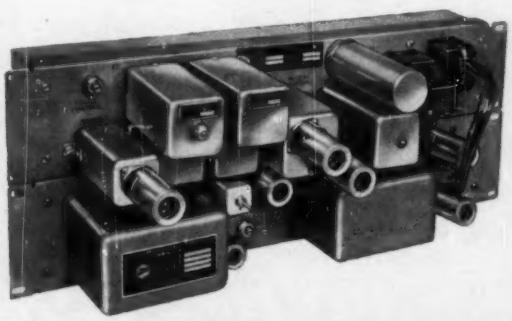
The Coupland central office will be retained in place, but the dial facilities will be expanded. A portion of the loan will also be used to complete the authorized system.

REA loans to the Caldwell County company will help make new and improved service available to 1,902 subscribers. Seven of the proposed eight exchanges now provide dial service to approximately 1,300 subscribers.

•

Iowa-Illinois Telephone Co., New London, Ia.; $1,819,000; June 15. Iowa-Illinois plans to use these funds to help it improve service for 3,249 subscribers and furnish initial service to 833 subscribers in Iowa. The borrower has acquired the Libertyville Telephone company with its own funds; and the Mt. Pleasant Telephone Co. and the Mutual Telephone Co. of Olds with both its own and REA loan funds. The acquired properties now furnish magneto, common battery and dial





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POWER EQUIPMENT — *Custom Power Systems • Battery Chargers*

service through exchanges at Libertyville, Mt. Pleasant and Olds to the subscribers.

New dial central offices are planned at Libertyville and Olds, and a combined dial and commercial office will be built at Mt. Pleasant which will serve as a district office for this portion of the system. In addition, a garage and warehouse building is planned at Mt. Pleasant, and additional toll center equipment is to be installed in that exchange.

REA loans to Iowa-Illinois will help make possible new and improved service for 28,677 subscribers in Iowa, one in Missouri and eight in North Dakota. Forty-six of the proposed 55 exchanges are now furnishing dial service to approximately 20,575 subscribers.

•

The Rainbow Telephone Cooperative Association, Inc., Everest, Kan.; $453,000; June 15. The cooperative expects to use this loan to improve service for 521 subscribers and furnish initial service to 68 subscribers.

Rainbow also proposes to acquire these telephone properties now providing manual service to subscribers: Bendena Mutual Telephone Co., and the M&W Telephone Co. The latter company has nearly completed construction of new central office buildings at Muscotah and Whiting, but has not as yet installed dial facilities.

In addition, the Rainbow cooperative plans to construct a new dial central office at Bendena, to complete construction of the two central offices at Muscotah and Whiting, and install dial facilities in them. A part of this loan will also be used to complete the authorized system.

Loans to this borrower will help enable it to bring new and improved service to 1,772 subscribers. Four of the proposed exchanges now furnish dial service to approximately 1,050 subscribers.

•

Northern Counties Telephone Corp., Hammond, N. Y.; $532,000; June 15. This company has allocated these funds to help it improve service for 564 subscribers and furnish initial service to 342 subscribers. A new borrower of REA loan funds, a commercial corporation, Northern Counties was incorporated in May, 1961 to acquire, improve and expand the facilities of the Citizens Telephone Co. and the Macomb Telephone Co., both in the state of New York.

The corporation proposes to acquire with its own funds, and with this REA loan, the Citizens company, and acquire with its own funds the Macomb company. The two companies now furnish dial service.

New dial offices are planned to replace the present buildings at Hammond and at Macomb; and the present building at Hammond will be remodeled for commercial use only.

H. Russell Cammer of 9 East 40th Street, New York, is president of the Northern Counties Telephone Corp., and Charles D. Smith is local manager.

L. O. Arstad Joins Hawaii Company As Chief Engineer

Leonard O. Arstad, recently retired assistant vice president-engineering in the Omaha headquarters of the Northwestern Bell Telephone Co., has been named to the post of chief engineer for Hawaiian Telephone Co.

Mr. Arstad will fill the vacancy left

L. O. ARSTAD

by Raymond M. Alden, who was promoted to vice president-operations for Hawaiian Telephone in February.

"We are very fortunate to have a man of Mr. Arstad's caliber and background to help us meet the problems and challenges that lie ahead of us," John J. Jaquette, Hawaiian Telephone Co. executive vice president stated.

The new chief engineer was born in Duluth, Minn. He received his bachelor of science degree in electrical engineering from the University of Minnesota.

Mr. Arstad has held many management positions with Northwestern Bell in operations, engineering, personnel and administration.

He began his telephone career gaining experience as a groundman, lineman, cable splicer and repairman before entering Northwestern Bell's engineering department in 1926.

He is a member of the American Institute of Electrical Engineers.

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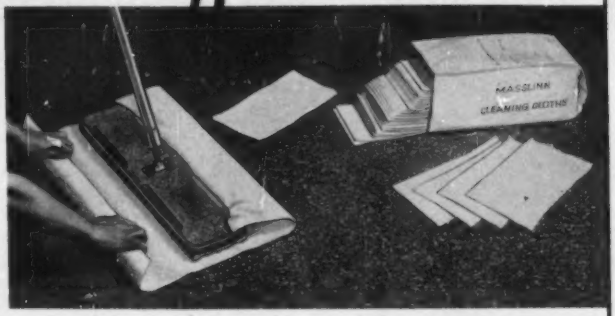

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LONGER ROAD LIFE
CUSTOMER APPEARANCE

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Magnolia Alum Coat affords a protective heat and rust resistant coating for radiators, blocks and brackets. Provides non-clogging spray application that dries in minutes.

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Magnolia Sun Resistor (blue-green tint)
Magnolia Rust-Rid (dissolving agent)
Magnolia Glass-Cleaner (dissolves bugs)

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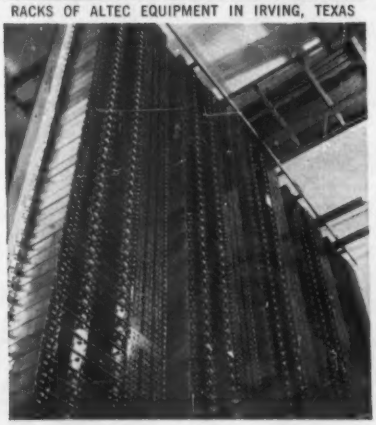

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You'll find a practical solution to the problem of supplying increased services within decreasing space in Altec's complete line of transistorized, miniaturized, plug-in repeaters and supporting equipment. The compact component shown at left typifies the space-saving size of Altec repeaters, compressors, power amps, equalizers, networks, relays, attenuators, and other miniature devices.

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In just ten years, Irving, Texas—a suburb of Dallas—experienced a staggering 1,640% population increase. To provide adequate services in a hurry, The Southwest States Telephone Co. used space-saving Altec equipment as part of its expansion program. Southwest found that Altec saved space two ways: through Altec's distinctive compactness and minimal heat generation. Thanks to the coolness of transistors, whole banks of Altec components were installed in tight areas.

OTHER PROBLEM SOLVING ADVANTAGES OF ALTEC: Telephone communications engineers now solve big problems with small packages from Altec. For example, Altec ASSURES PROMPT DELIVERIES! Your projects need never again wait on back-ordered parts; Altec deliveries are speedy because they're **normally made from stock.** Altec offers RAPID, SIMPLE ASSEMBLY! Altec 7300A and 7303A telephone repeater panels come fully wired to allow rapid establishment of 2-wire to 4-wire, 4-wire intermediate, or 2-wire to 2-wire systems with Altec plug-in components. And, Altec offers POWER ECONOMY! Altec amplifiers are energized by local battery or either 24-26 or 48-52 volt special power supply. **130 volt supply is not required.**

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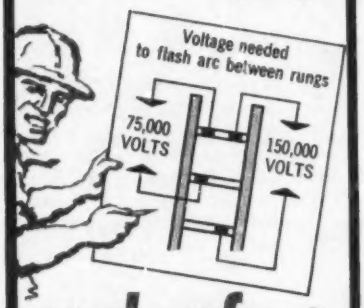

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Non-conducting, non-absorbent, yet strong and light as an aluminum ladder! Power company tests indicate Alco-Lite Fiberglass Ladders extremely safe around high voltages. Resist chemicals, acids, gases, fumes, and moisture.

Alco-Lite Fiberglass Ladders meet ASA Code A14.2 for portable *metal* ladders. The wider side rails are SOLID fiberglass—not plastic covered soft wood. The wide steps and rungs are high tensile strength aluminum. More riveting and bracing throughout!

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ILLINOIS CONVENTION

Continued from page 42

tion of leadership", satellite communications are essential.

A communication satellite will become, in effect, a microwave tower in the sky. As microwave is known for its high call carrying capacity over land for long distance calls and network television, the satellite has an obvious advantage.

While there were technical problems of weak signals and static when Project Echo was launched, the receiver horn antenna and the revolutionary Maser are doing the job of reamplifying the signals—in the case of the Maser, about 4,000 times.

The Illinois Bell representative reminded his convention audience that Echo served to teach many things, and was considered a success, but it was a passive satellite, and "the real future lies in active satellites which are capable of receiving, reamplifying and retransmitting signals."

The transistor and the solar cell are other Bell developments which will become an integral part of any active satellite.

Much is yet to be done in determining where these active satellites will be put, said Wanner. Project Echo was at the 1,000-mile altitude—low.

In the plans to experiment with a high altitude system, there will be three satellites at 22,300 miles in synchronous orbit; at medium altitude, 30 to 50 satellites, 5,000 to 7,000 miles high, in polar orbit.

Bell's contribution to this medium-height part of the experiment is Project Telstar. The purpose of Telstar is to demonstrate that an active satellite can provide high quality transmission of calls, TV and data; and also to reveal how a communications satellite will be affected by space conditions. This amazing satellite is expected to provide 600 voice channels or one television channel.

Ben Smith, general merchandising manager of the Southwestern Bell Telephone Co., St. Louis, sparked the exploration of sales potentials.

The " 'sell, sell, sell and sell more' obsession in the quest for bigger sales," said the merchandising authority, "can be a road to ruin." He asserted "marketing, not just 'sell, sell, sell' " is the key to sales profits. The title of Mr. Smith's profits-packed address: "Profitable Selling".

"Profitable selling," said Smith, "depends on how well you relate 'what' you sell to 'where', 'how', 'when', 'why', and 'to whom' you sell. Putting all these together in your sales plan is marketing.

"A profitable telephone sales program is built around three objectives:

"(1) Sell service that people will keep.

"(2) Sell service that does not have high move costs.

"(3) Sell items that have high salvage value.

"Sell, Sell, Sell . . . yes. But first study, study, study."

Telephone companies, the Southwestern Bell executive said, have profits waiting for them in residence and farm markets through sales of extension telephones, second main lines, extra listings, telephones for teenagers and special equipment items such as illuminated dial sets. "But those profits will *keep* waiting" he said, "if you don't spot them and go get them."

"First, you have to learn *where* the opportunities lie," he continued. "There are many sources for learning this—census material and surveys of all kinds, in addition to alert everyday observations by sales-minded telephone people on the job.

"Less than one per cent of the average annual household expense now goes for communications. This alone shows that customers can afford more telephone service.

"People are on the move, going into new homes either across the street or across the nation. This means a constant residence market for telephone service and a natural opportunity to contact customers . . . while you're there is the time to sell them what they need."

"Households are getting bigger, too," Smith said. He pointed to Department of Commerce figures that show the average household has 2.22 bedrooms; and 38.1 per cent of all households have two or more bedrooms. This should be suggestive in telephone sales potential, too.

He reminded Illinois telephone men and women that people buy extension telephones to save steps . . . to avoid trips up and down stairs or through the house to get to a ringing telephone . . . as a help during illness . . . as a general convenience . . . for added privacy and security . . . for night and business calls. "Yet a survey of one-telephone homes show 29 per cent have the telephone in the living room, 23 per cent in the dining room, and 15 per cent in the hallway. None of these are locations where people spend a lot of time."

Following up these and other suggestions on where to find additional sales, Mr. Smith offered these merchandising helps:

Color telephones stimulate extension sales and color instruments apparently have longer location life than black telephones.

The kitchen is now the preferred telephone location in the home. Bedroom preference has risen, and the old favorite living room has dropped in popularity.

People tend to over-estimate, rather than under-estimate, the cost of additional telephones . . . so price education of customers is important.

Homes with more than one telephone still are fertile fields for extension sales. Of these, Southwestern Bell studies show that 89 percent have only one extension and only two per cent have three or more.

George J. Edland of Chicago, chairman of the golf committee, presides at trophy awards ceremony during Illinois convention.

Special equipment items such as illuminated dial and volume control sets can be marketed better than they are today.

A second straight line is a promising money maker in the residence market, with the crop of teenagers coming on.

Don't overlook the farm market. Farmers' calls are urgent. They depend more and more on the telephone to run their business—and farming is big business. Today's farmers' telephone needs and wants are modern. Farmers want service in their farm buildings other than the home. They have shown interest in such things as signaling devices, loud speakers in the yard, loud speaker-microphone systems, intercom systems between buildings.

On the "how" of selling residence and farm markets, Mr. Smith advised:

On each new connect or change-of-address contact, suggest to customers ways to improve their service with additional telephones, special equipment, extra listings in the directory, etc. Do this on other types of business office contacts, too.

On plant premise visits, show bed-

DATE_____

Please send me catalog and price information on cable caps

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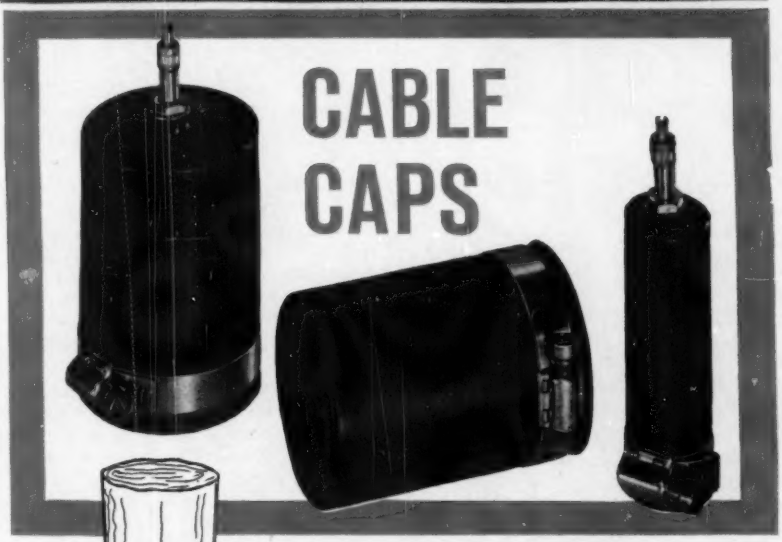

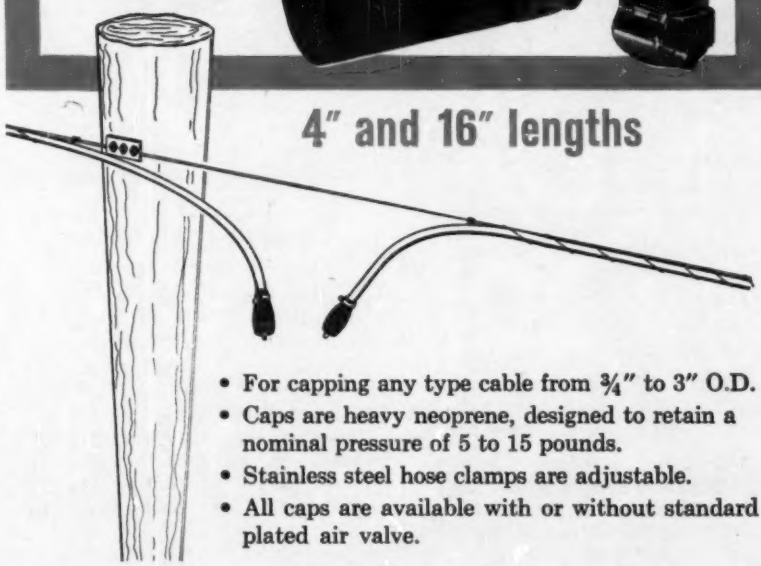

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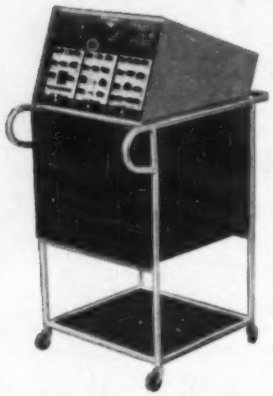

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room and kitchen telephones in color, and ask customers for their orders.

"These efforts will take continued enthusiasm and interest by you and all your people, but it will pay off in better service for your customers, more services added for your customers, and more revenues for your company at low cost," he concluded.

Dr. Robert J. Samp of the University of Wisconsin Hospitals, Madison, entertained the convention at its annual banquet with a talk on "Pills, Pinkham and Poison".

The Illinois Association elected these directors: Donald F. Anderson of Geneseo; Ora M. Westrup of Mattoon; Ray J. Alter of Galesburg; Ben B. Boynton of Springfield; John F. Tharp of Springfield; R. W. Britt of Bloomington; Russell Logue of Casey; Robert P. Reuss of Springfield; Roland Schmidt of St. Jacob; K. L. Schroeder of Freeport; and M. M. Wandrey of Des Plaines.

Directors elected to fill unexpired terms are: Arthur P. Murray of Sycamore, replacing Daniel A. Schafer, past president of the association; Walter F. Brissenden of Springfield, succeeding the late A. T. Renn of Chicago; and Walter G. Wright of Bloomington, replacing R. M. Wopat, formerly of Bloomington.

F. S. Coakley of Dixon was re-elected as a director for three years, as were Morris A. Kugler of Okawville; and Messrs. Alter and Anderson L. N. Ewers of Morrison was elected to succeed James Stice of Altamont.

Officers elected by the directors are as follows: President, Mr. Anderson; vice president, Mr. Westrup; treasurer, Mr. Alter; executive secretary, Mr. Tharp; and general counsel, Mr. Boynton.

ANNUAL REVIEW

Concluded from page 33

(400 cycles modulated by 40 cycles), and class-of-service tone (500 cycles). The generator for each tone is a self-contained unit, capable of providing five watts of tone power, and could be utilized in offices of up to 30,000 lines. It operates from either 24 or 48-volt battery, has output voltages adjustable in 6 db steps, and has no moving parts.

Each generator consists of a case 5⅛ inches wide, 5 inches deep and 3¼ inches high, which houses two printed-wired cards, input circuitry, and the output transformer. The generator is mounted by securing it to the face of a panel which requires 3 inches of vertical space on a 23 inch rack; up to four generators can be mounted on one panel, permitting use of separate generators which can be installed for dial tone and busy tone, if desired.

To Be continued

Name V.P., General Manager of Kearney Corporation

The appointment of Walter P. Matzelevich as vice president and general manager of James R. Kearney, St. Louis and Fayetteville operations was recently announced. The company

W. P. MATZELEVICH

manufactures transmission and distribution equipment for the electrical utility industry.

Prior to joining Kearney, Mr. Matzelevich was plant manager of Line Material Co.'s Kyle oil circuit recloser plant in Milwaukee. He had previously been plant manager of this same company's operations in Sherman, Tex.

Mr. Matzelevich received his degree in mechanical engineering at Worcester Polytechnic Institute and his master's degree in business administration from Harvard.

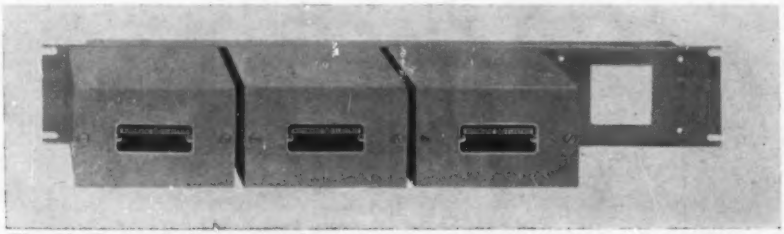

Fig. 23 Electronic tone generator

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Cascade Pole Co., P.O. Box 743, Tacoma, Wash.—Creosoted Douglas Fir and Cedar Poles.

C. M. Christiansen Co.—Northern White Cedar Poles, Pentachlorophenol treated. Plant and Yards, Phelps, Wis.

Eppinger & Russell Co., 80—8th Ave., New York 11, N. Y.—Poles—Creosoted, Penta, Creo.—Penta. Plants: Norfolk, Va., Eddington, Pa.

International Creosoting and Construction Co., Galveston, Texas—Creosoted Southern Yellow Pine Poles. Plants, Beaumont and Texarkana, Texas.

International Paper Co., Wood Preserving Division—926 Grand Avenue, Kansas City, Missouri—"LONG-BELL" pressure-treated Southern Pine and Douglas Fir Poles—Creosote or Penta.

Piedmont Wood Preserving Company—Creosoted and Creosote-Penta Treated Pine Poles. Plant, Augusta, Georgia. Yards, Virginia, West Virginia and Connecticut. Address Inquiries to Box 1662, Spartanburg, S. C.

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230 LINE KELLOGG RELAYMATIC central office complete. 400 dial telephone sets consisting of AE type 40, WE type 302, Kellogg type 1000. Write or call South Georgia Telephone Co., P.O. Drawer B., Sylvania, Ga. Telephone: 564-7411.

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FOR SALE

LIKE NEW 901—Wall or desk Magneto telephones with Koiled Kords and connecting blocks; $15.00 each. Write Telephone Co., Turtle Lake, Wis.

NORTH ELECTRIC CX-200 CDO—ready for delivery. Any reasonable offer will be considered. Reply Box No. 91, New Bethlehem, Pa., or call A. Cypher, 814-BR 5-1100.

USED TELEPHONES, 176 Stromberg-Carlson 1243's; 42 Stromberg-Carlson 1250's; 31 North 9000's; 59 North 9800's. These are priced to sell. Quantity lot prices, $4.50 per set. Polar Rural Telephone Corp., Park River, N. D.

GOOD 12 CHANNEL CARRIERS type 42C Lenkurt and J Western Electric. Available late 1962 and early 1963. Any reasonable offer would be considered. General Telephone Company of the Southwest, P. O. Box 1001, San Angelo, Tex. Tel: 949-1911—Area Code 915.

TYPE 302 WESTERN ELECTRIC PHONES cleaned, tested and complete except ringer - $3.00. All the following parts are used in this phone: 101A coil, $.25; 195A condenser, $.25; switch spring assembly, $.25; 42, 54, 66, CY; Kellogg ringers, $.50; housings, $.50; bases, $.50; handset complete with unit and cord, $1.00; 5H dial, $1.00. All parts tested and guaranteed. Minimum order $25.00. Anderson Telephones & Electronics, 2511 W. Jean St., Tampa, Fla. Phone: 87-64630.

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WALL OR DESK

LEICH 901

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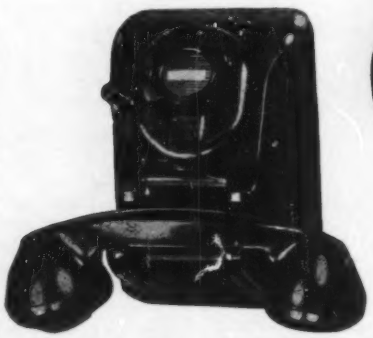

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ONE OF THE LARGEST INDEPENDENT telephone companies in the State of California, has opening in Commercial Engineering Department, for an employee with telephone experience. Experience should include a general overall background in telephony with qualifications specifically in commercial, tariff administration, revenue requirements and regulatory administration. All inquiries confidential. Send resume to California Interstate Telephone Co., Attention G. P. Atmore, Personnel and Public Relations Manager, 16461 Mojave Drive, Victorville, Calif.

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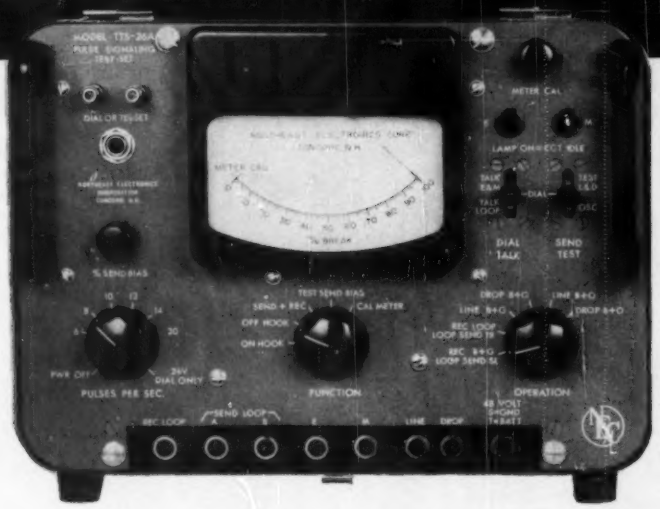

MODEL TTS 26A
PULSE SIGNALING TEST SET

FEATURES

- Send pulses from internal oscillator at rates from 6 pps to 20 pps, or external dial
- Wide range of % break control on send pulses
- Measures % break of send and receive pulses
- Single scale meter through internal switching
- Loop or E+M operation
- Dial and Talk functions
- E+M supervisory lamps
- On Hook and Off Hook provisions
- Transistorized oscillator circuits
- 48-Volt DC operation
- Operates in horizontal and vertical positions

Dial pulsing problems are a major factor of complaints in failures to complete calls or reaching wrong numbers. The increasing use of DDD is bringing greater recognition of the need for minimizing dial pulse distortion.

The *Model TTS 26A* is a pulse signaling test set designed to aid in tracking down the sources of trouble in signaling systems. It may be used in central offices, at PBX's, or on subscribers' instruments to generate calibrated signals and also to measure the % break of dial pulses.

It is designed to either send pulses generated by a built-in oscillator or pulses obtained from an external dial; the % break of the transmitted pulses can be varied over a wide range and can readily be measured. In addition, the set measures the % break of pulses received in the circuits to which the set is connected. Signals can be received or transmitted on a Loop or E+M basis.

The instrument can be operated from a power source of 48 volts DC or an external 45-volt dry battery. It can be used in a vertical or horizontal position. A detachable cover includes storage space for cords, small tools, and other items.

The Model TTS 26A consists of an internal pulse generating circuit, provisions for sending signals obtained from an external dial, and a measuring circuit designed to measure the % break of the send pulses generated by the instrument or the receive pulses on the circuit under test. Controls are provided for switching different functions and modes of operation and to calibrate the instrument to eliminate the effects of battery voltage variations.

Other instruments available from Northeast Electronics Corporation include Transmission Test Equipment, Single Frequency and Multi-Frequency Reference Tone Generators, Loop Around Transmission Test Systems, Fault Locator, Singing Point Test Set, Program Amplifiers, and RF Power Monitors.

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FRED DORR is captain of our revenue team in Durham, N.C. Graduated from the Univ. of Kentucky. Was active in many student government and honorary organizations. Served in Korea as a first lieutenant. Now active in V.F.W., Elks, American Legion, and Durham Sales Executive Club. For recreation he enjoys swimming and music. Joined Gen Tel Directory in '54. Sales Supervisor in '57. Named Acting Div. Mgr., Durham, in '61. Division Mgr. in '62.

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